Next 2 Page(s) In Document Exempt

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THE STRUGGLE FOR THE WORLD PRODUCT

Politics Between Power and Morals

By Helmut Schmidt

ANYONE who, in these weeks and months of the "oil crisis," is asked to forecast the future development of international economic relations and who looks for fixed data and reliable trends to support his forecast will soon run into serious difficulties. Even after the mid-February Energy Conference in Washington, the impression, disturbing in many respects, remains that the world economy has entered a phase of extraordinary instability and that its future course is absolutely uncertain; it may bring stability, but also still greater instability. More integration, closer coöperation, an improved division of labor may increase the overall prosperity of nations. But the future course may just as well be characterized by disintegration, national isolation and the search for more self-sufficiency, thereby enhancing the contrasts already existing in the world.

It would be wrong, of course, to believe that the oil price explosion was the only cause of instability. But the massive increase in oil prices has clearly revealed the actual fragility of this elaborate system of economic relations among the nations of the world, from the structure of their balance of payments to their trade policy. To use energy nomenclature: just as a high-energy neutron breaks through the electrical shielding which surrounds the atom and penetrates into the nucleus, oil has shaken the very foundations of the present world economic system. And just as the neutron may induce oscillation and shatter the nucleus, oil may shatter the laboriously built structure of the world economy. The oil crisis may touch off a chain reaction of destructive forces, but—if properly harnessed and controlled—it may just as well help to improve international coöperation, if all those concerned join in the efforts to find the common denominator of what is going on these days between the Libyan desert and the Gulf of Maracaibo, and if they build a policy of reason on that common denominator.

II

At this present stage there can hardly be any doubt that, long before the explosive rise in the prices of almost all raw materials, international economic policy was moving toward a critical phase. It is no longer possible to ignore the fact that difficulties

more recently multiplied, bit by bit, and what is astonishing is that this has happened during a period of worldwide new production records. Whereas, on the one hand, the world economy was experiencing a fantastic boom, there was, on the other hand, growing uneasiness about the institutions, particularly the slowness with which they were adapting to changing conditions, to new tasks and objectives, in order to ensure a greater equality of starting conditions among nations and to enable an undistorted exchange of goods and services among them. The crisis toward which the world economy was moving was not so much one of production as a crisis of its institutions in structural respects. In particular, the rules governing the exchange of goods and services were questioned on an increasing scale.

The protracted ill-health of the Bretton Woods system was one of the most significant symptoms of this development. Under the impact of the cumulative effects of inflation and speculative crises, this system finally collapsed and thus ceased to exist as an integrating factor. Ultimately, the system broke down because it failed to provide the framework for an orderly exchange of goods and services. Bretton Woods benefited some countries more than others—particularly the strong more than the weak—and above all it burdened the international monetary system with the payments deficits of the superpower. And thus it is not astonishing that, finally, a system that initially had been so successful should have produced interventionist policies on an increasing scale rather than greater economic freedom.

Even with imagination and expertise, it is difficult to establish a new and better system. It is difficult to create a supranational standard of value which is not at the same time a national currency, like the dollar, or a commodity used for speculative purposes, like gold. The "Special Drawing Right," as an artificial numeraire without a market price, and with official parities only for transactions between central banks, was to be declared a primary currency reserve and to be made so strong that it could win the necessary confidence. There were to be fixed but adjustable exchange rates. In addition, it was intended to ensure that the extent and duration of payments imbalances should be appreciably reduced, that the facilities for financing such imbalances should be limited rather than expanded. All countries were to be obliged to settle payments balances from their own reserves.

The process of evaluating the pros and cons of the proposed monetary rules is still under way. What has so far emerged, after lengthy negotiations in some of the most beautiful cities of the world—including Nairobi, the modern metropolis in East Africa, and Rome, the ancient metropolis of Western civilization—is at least a basic concept. Luckily, there has also been found an interim solution to the important question of the valuation of the Special Drawing Right: the yardstick is to be the average value of a "basket" of major currencies instead of the U.S. dollar. On the other hand, however, there has so far been no decision on the question of how to finance the payments deficits of the less-developed countries; this question, though at first glance it appears to be of secondary importance from the point of view of monetary policy, is actually very important in the

light of recent developments. It is certainly true to claim that, despite open flanks, the understanding for the common cause has increased and that therefore the continents have moved closer together in certain fundamental views. But even if all moral accessories are left aside, nobody—including the author of these lines—would be able to say just when the new system can be put into operation. For nobody, in view of the still incalculable effects of the dynamic changes in the terms of trade, can confidently claim to be in a position to determine new fixed parities and afterward defend them against market forces.

There are more symptoms of this struggle for new and better rules—e.g., in commercial policy. Last year we witnessed a peculiar, and largely unnoticed, formalistic dispute both within the European Community (EEC) and between the latter and the United States as to whether and in what form a connection was to be established between the reform of the international monetary system and the new multilateral trade negotiations (GATT) in Tokyo. France had initially requested that the new GATT Round should not begin until fixed parities had been reintroduced. The other European countries advocated concurrent efforts toward further liberalization of trade *and* monetary stabilization. The United States, on its part, was ready to support this formula of concurrent efforts only if it was clearly expressed that an efficient monetary system also called for a commercial policy prone to adjustments.

All this looked like a dispute on formal issues only. But, at the same time, it was the expression of fundamentally different positions: monetary matters first and trade afterward; or monetary matters and trade at the same time; or trade promoting monetary matters—these are concepts which may call for different approaches on the part of the nations concerned, and possibly the acceptance of economic disadvantages or sacrifices. Meanwhile, this dispute has taken on a purely academic character.

The Conference held last September in the Japanese capital was an example of the above-mentioned concurrency and its ultimate results are still largely incalculable. The opening declaration of Tokyo is by no means the Magna Carta of an open world economy based on division of labor, although any reasonable person will accept the objective that the new GATT Round should promote the further liberalization of international trade in order to raise the standard of living and increase the prosperity of nations. He will likewise endorse the general claim that existing customs barriers should be lowered further and other trade barriers reduced or removed.

But the bureaucratic infighting behind these fine words is still going on, as is the struggle over the prices of raw materials. The wrangling is about tariff headings, preferences and counter-preferences, the purpose and extent of protectionist measures. Here, too, as in monetary matters, national interests play a prominent role. Not all countries, for instance, are as vitally interested in the largest possible degree of freedom for world trade as the Federal Republic of Germany. Thus, countries which have only just begun to build up industries at enormous social cost will not

be too eager to enter into free competition with the powerful combines of industrialized countries. On the other hand, even in highly developed countries there are certain sectors whose competitiveness is limited; a case in point is the German clothing industry, which is complaining about low-priced shirts being imported from Formosa and Hong Kong. Such sectors cannot stand up to international competition and genuine social problems are created in the countries concerned when economic activity is running at a low ebb.

Agriculture will probably continue to be a further reservation in the system of a free exchange of goods and services. Agriculture is the spoiled child of protectionism, not only because governments vie for farmers' votes, but also because—understandably—every country is anxious to preserve its own minimum basis for feeding its people. This statement can be proved by hard-and-fast figures if one looks behind the scenes of European as well as U.S. agricultural policy. To the outside observer, the policy of European integration appears to be a puzzling tug-of-war over egg prices or wine quotas. Both in Europe and in the United States, the baffled consumer will often have the impression that relationships between the two are determined exclusively by soybeans and Arkansas chickens. Those who resent the economic power of the United States speak of the American challenge, and there may even be such strange excesses as the claim that the consumption of American chickens results in impotence.

Nor can we be certain that free capital movements are welcomed everywhere. Did not American newspapers, for instance, publish malicious reports on an allegedly unlimited stream of German capital into the West? Some people already saw the place swarming with Teutonic roughriders lassoing American cattle. And was not the United States somewhat vexed about the association policy of the EEC, which was even alleged to be striving for hegemony over the United States? Someone even invented the malicious quip that the Sixth Fleet in the Mediterranean would probably soon have to file an application for association.

Meanwhile, however, it will have been realized from New York to San Francisco how difficult it still is for Europeans to translate their dream of a political union into reality. It is not without protracted and painful labors that the Regional Fund is being created, which so far is the latest of the instruments of European unification, following the Agricultural Fund, the Social Fund and the somewhat ill-fated monetary "snake." And it is conceivable that Europe's failure to tackle the oil crisis by pursuing a common policy will have an impact on the further process of unification.

III

What is the reason for this state of affairs? Why is it that 30 years after Bretton Woods the urgently needed reform of the international monetary system makes so little headway? Why is it that nations find it so hard to soften their protectionist trade systems and to give their trade policies a new, open and equal structure? Why is it that after almost two decades of effort toward European unification, European political union is still un-

finished? What is the reason for these disputes about quotas, customs tariffs and posted prices? And the oil problem which now creates new and very strong tensions, is its nature not basically the same?

David Ricardo would certainly not like this state of the world economy and its institutions if he saw it. But he might congratulate himself on the skepticism and foresight he showed in discussing the consequences of the free trade thesis of his teacher, Adam Smith. Admittedly specialization, division of labor and free trade across national boundaries have increased the wealth of nations and caused an immense supply of goods in the same way as the division of labor increased production within a single nation. But the main problem then is to define the laws which determine the distribution of this enormous output; it might be added: which determine the "fair" distribution, the "equitable" price, the "proper" value.

Even today, these "laws" have not yet been defined. The most ingenious theories of distribution in most cases explain only parts of the problem or are infeasible in actual practice. What remains are resourceful bickerings over the results of the joint efforts, a game full of ruses and little tricks, with strategies of threats, attrition and fatigue, of overnight conferences and dissolved meetings, a game of coalitions and cartels. What we are witnessing today in the field of international economic relations—in the monetary field and now in the field of oil and raw material prices—is virtually the same as what is going on between trade unions and employers' associations on the national level. It is a struggle for the distribution and use of the national product, a struggle for the world product.

But whereas the struggle for distribution has hitherto been fought within the framework of monetary and commercial rules, it has now become a struggle over prices as well and has thus taken on a new and in many respects dangerous dimension. The struggle over oil prices may be followed tomorrow by a similar struggle over the prices of other important raw materials. And since what is at stake is not just pawns on a chessboard, but the peaceful evolution of the world economy and the prosperity of the nations of this world, we need a politically sound philosophy if we are to win this dangerous fight.

IV

It would be a mistake to approach the oil problem with illusions, with a swashbuckling rattle of the sword in the manner of a past century's gunboat diplomacy or in an egotistical overbearing manner. This is no way in which to conduct the distribution combat! Each side, the oil-producing and the oil-consuming countries, must learn to understand and appreciate the other's interests, means and possibilities, since there is no other way of avoiding abortive actions and corresponding reactions. The hectic events of the past nine months appear to indicate that this point has by no means been fully grasped.

Oil consumers would be well advised to examine the oil producers' motives impartially. It is true that, in the Middle East, current political issues have a bearing and that, to this extent, oil

is considered a political weapon. But, in essence, the oil price issue is not one of a clash over the Suez Canal, the West Bank or Jerusalem. What the oil producers, and not only the Arab ones, have in mind is to increase their share in that portion of the world product which is created with the aid of oil, the most important raw material for years to come. And they are able to do so to the extent that increased oil prices push up the import figures of oil-consuming countries at a rate higher than that at which the latter are able to step up their prices of exports.

The oil consumers would do well to grasp that this is exactly what is intended and not to allow certain facts to be repressed into the subconscious mind, especially the present distribution of wealth between industrialized countries on the one hand and oil-producing countries on the other. If, for instance, U.S. per capita income in 1971, i.e., a year prior to the start of the present price measures of the OPEC countries, were taken to be 100, the latter countries' figures for 1971 would be as follows: Kuwait 75, Abu Dhabi 49, Qatar 45, Libya 28, Venezuela 21, Saudi Arabia 11, Iran 9, Iraq 7, Nigeria 3, Indonesia 2.

And these figures are by no means a true reflection of the actual level of wealth attained in those countries; the disparity, in real terms, for the bulk of the population can well be assumed to be greater than these figures reveal. And it is this gap in incomes or wealth that alone should be taken to motivate the oil countries' policies.

Seen from this angle, the Western industrialized countries, including Japan, being oil consumers, can hardly avoid acknowledging the merits of the oil countries' claim, seeing that cheap oil was in the past a major factor in the former countries' growth. They should not blind themselves to the fact that the times of cheap oil are past and gone. A posted price of $1.80 per barrel of Arabian oil from the Persian Gulf, as it prevailed in January 1970, will not recur. It will not do so because oil producers, following ten years of systematic OPEC policies and aided by 20 years of careless energy policies on the part of the consumer countries, now have the power—in the form of the OPEC cartel—to achieve by increasing their prices the distribution pattern they desire. They have the power of those who control resources in short supply, resources which are of importance, in limitative respects, to a multitude of production lines in industrialized countries. There is so far absolutely no substitute for oil and its derivatives available at short notice; at the most, a sort of fringe substitution might be possible in alternative fuel power stations. Certain economies in quantities consumed are, however, possible at short notice and that alone would involve considerable changes in consumer habits. In other words: as a short-term proposition, the elasticity of demand for oil and its derivatives is very slight, and thus the conditions are right for an independent price policy.

On the other hand, oil producers would do well not to regard the new independence and power they have in pricing to be a device which is devoid of all limitations and consequences, especially in view of the effects this may have on the very existence of the developing countries. They should proceed with care

when marking out their field of action. In doing so they should above all not allow this newly grown consciousness to mislead them when assessing the industrialized countries' economic possibilities. For although there is only a very slight possibility of substitution for oil at short notice, there is a limit to the price that can be charged. In the short run there is at least a point beyond which economic stability would be in jeopardy. And that point is reached whenever the industrialized countries are confronted with intolerable adaptation and reorganization problems incapable of being solved at short notice and are thus driven into employment crises or toward an even higher rate of inflation. In this context, I do not wish even to contemplate a point—at least theoretically conceivable—beyond which the irrational use of force might ensue.

But if we think in terms of five to ten years, the elasticity of the demand for oil will rapidly increase. Oil used for heat-producing purposes will become substitutable as soon as the price of oil equals or exceeds that of alternative sources of energy. However, scope for substitution is smaller in certain sectors of transportation and of the petrochemical industry. In the long run, though, oil could be replaced by electricity even in the field of transportation, for instance if nuclear energy were available to a greater extent, and long before that coal will have been assigned a larger role as a basic material in the chemical industries.

For these reasons, oil-producing countries would not only be gravely misjudging the power they wield but also be jeopardizing their own interests if they were to try to attain maximum absorption on a short-term basis. It would run counter to their own long-term interests if oil-producing countries were to pursue a price policy that would drive Western industrialized countries onto the verge of, or even right into, crises: you do not kill the goose that lays the golden egg. Extreme, supermonopolistic absorptions simply are no sensible strategy if the object is to narrow the income gap between the group of industrialized countries and the group of oil-producing countries. But the most important aspect is that such a policy would force the industrialized countries to resort to sweeping crash programs designed to direct their entire resources, their entire sophisticated technology to the substitution of oil or to the exploitation of unused oil reserves (sands, shales). Consequently, in the long run the effect for the OPEC countries might well be reversed. As far as the interests of the oil-producing countries are concerned, the optimum solution would therefore not lie in a *short-term maximum* absorption but rather in an absorption that is *achievable and tolerable on a long-term basis.*

With this in mind, a major question mark remains over the present oil-price policy. Price increases have been so exorbitant that, as a result of changes in incomes and demand, serious repercussions, particularly on employment, cannot be ruled out. In

addition, the oil-producing countries have obviously also become aware of the strain which they impose on a fragile monetary system through their sudden withdrawal of purchasing power.

Therefore, even if one recognizes—as I do—that producer countries have a good case for claiming a greater share, there will have to be negotiations on the size and terms, because a new equilibrium cannot be the result of monopolistic practices and mechanisms, but will have to be brought about by balanced judgment and advance planning. Producer and consumer countries will have to sit down at the same conference table. In those talks, the oil-consuming industrialized and developing countries should not be forced at short notice to lower their standard of prosperity at the expense of their social stability. It should on the contrary be in the interest of the oil-producing countries, as well, to ensure that they can satisfy their requirements by being able to draw upon industrialized countries' national products that are in a process of growth and possibly even undergoing structural changes for the better.

At the same time, the problem of the use of the enormous monetary purchasing power now accruing to the oil-producing countries should be discussed, since this will have repercussions on the employment situation in the industrialized countries and on the extent of unavoidable structural changes. The search for solutions will certainly not be facilitated by the fact that there is no homogeneity of interests in either group. Some of the oil-producing countries such as Iran and Venezuela will—at least on a medium-term basis—be in a position to utilize the accruing purchasing power for, say, internal investment projects destined to expand their own production capacity. To this extent they will become importers of industrial goods and consequently trigger off a corresponding demand for export goods in the industrialized countries. Here lie welcome chances for economic and technological coöperation aiming at an accelerated industrialization of the oil-producing countries; this approach will require the development of coördinated programs. Other countries such as the sheikdoms of the Persian Gulf, Saudi Arabia and possibly Libya will—even on a medium-term basis—not be able to absorb the additional purchasing power within their own frontiers. They will, in other words, not increase their imports and consequently not bring about an increase in demand for export goods; they will invest their monetary capital in other countries rather than spend it. This will result at first in the accumulation of huge, readily disposable amounts running in billions, which could well flow back to the industrialized countries as capital imports. Such amounts might also be made available to countries of the Third World which in turn could use them for buying export goods from industrialized countries.

The situation on the part of the oil-consuming countries is equally differentiated. Some of the industrialized countries are more seriously affected than others, the degree varying primarily according to the extent to which they are dependent upon oil imports and according to the previous position of their current account and their balance of payments in general, and finally, according to their export capacity. Countries with a current

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account surplus, i.e., countries which have so far not used their entire national product internally for consumption and investment, but have made part of it available to other countries, thereby acquiring monetary claims, are hardly expected to run into difficulties. This applies, for instance, to the Federal Republic of Germany, whose current account surplus is quite substantial. For the Federal Republic, even the increase in oil prices will presumably not result in a current account deficit. German export industries enjoy a high reputation in potential purchasing countries. In addition, the Deutsche Mark is backed by a very large monetary reserve so that any lean period could easily be overcome. The effects of the increases in oil prices on income will of course also be felt by countries with a strong monetary position.

Other countries whose balance of payments have hitherto been in equilibrium or have already shown a deficit, particularly a number of less-developed countries, may well run up such huge deficits on current account that they might very shortly be facing enormous financial gaps resulting in an immediate and urgent necessity either to step up exports or to reduce imports. Such a situation is extremely dangerous for the future of the whole world economy. But it would be a great mistake if each individual country within the group of oil consumers were now selfishly to try to solve its payments and employment problems by pursuing beggar-my-neighbor policies at the expense of its trading partners. Any relapse into largely bilateral bartering would be just as dangerous as any reintroduction of trade restrictions. Nor should there be any competitive devaluation. After the Washington Conference, we can only hope that, however justified the concern about specific national problems may be, the common interest will not be forgotten. Otherwise, an arrival at the point of no return cannot be ruled out.

The present flexibility of exchange rates may well facilitate the adjustment process, but it should not be allowed to lead to excessive downward floating. Any current account deficits that would remain if a compensatory increase in exports cannot be achieved at short notice might well be financed from the surpluses of oil-producing countries. The point would be to release capital flows of more or less the same size as the various current account deficits of oil-consuming countries. A large-scale concentration of investments in a few individual countries would create well-nigh insurmountable difficulties both for the latter countries and for those which fail to balance their current accounts for lack of capital imports. Should the earnings of the oil-producing countries, rather than being invested on a long-term basis, remain "mobile" as a whole and be capable of being moved at short notice out of one currency into another and from one investment outlet to the next, there would furthermore be new serious risks for the monetary situation.

Of course, a certain portion of the investment-seeking oil funds will find its way to consumer countries automatically: in the form of direct investments, investments in securities, credits and bank deposits, either direct or via existing or new Euromarkets. Coun-

tries which would not automatically obtain an adequate share of these monies might remedy the situation by offering investment incentives or possibly by issuing foreign currency bonds, though there should be no free-for-all in the field of foreign bonds.

If, in the choice of countries in which to invest oil funds, preference were to be given to those with strong currencies, the latters' private sector investment outlets might prove insufficient. If so, it might be advisable to examine whether public investment outlets could be expanded. Above all, the countries concerned would have to ask themselves whether they were in a position to act as "marshalling yards" for international capital flows. They would have to try to offset inflowing liquidity by capital exports and this might entail the willingness to accept financial risks. Two countries that might be capable of undertaking this very difficult task could, for instance, be the United States or even the Federal Republic of Germany. Such a "marshalling yard" could help to direct the capital outflow selectively into those countries which—as a result of the oil crisis—are faced with major balance-of-payments problems. In the first place, however, this task would be a matter to be tackled by multinational institutions.

V

No matter what action the industrialized countries may take to wipe out balance-of-payments current-account deficits, the fundamental problem as such will remain unsolved. A process of shifts in patterns of income has been set in motion on a huge scale. The questions facing the industrialized countries are what strategy they should reasonably pursue and whether they are well advised to rely on capital imports in attempting to come to a long-term solution of their internal employment and financial problems. During a transitional phase this surely should be possible and might even be necessary in order to give the industrialized countries concerned time to adapt.

What will probably be unavoidable in the long run is a process of structural changes which would, among other things, increase the export capacity of those industrialized countries whose exports now flow at a low level. This results from the pressure of the Third World's dire needs. These would increase if the now-beginning process of transfers of purchasing power were to be strictly confined to industrialized countries on the one hand and oil countries on the other, especially if the released investment-seeking oil billions flow back in the opposite direction. The developing countries are in danger of being left high and dry. Their very existence is threatened by increasing oil prices because they do not have as high a net product as the industrialized countries to draw upon. For those who view the prosperity gap between the rich and the poor of this world with concern, every effort must be made to see that the oil producers place that portion of their additional purchasing power which they are unable to absorb at home directly at the disposal of developing countries to make effective the latter's demand for imports from industrialized countries.

The international organizations, too, will have to join in the efforts to channel the investment-seeking funds of oil countries to where they are needed to lessen the differences between levels of income. The International Monetary Fund (IMF), the World Bank, the International Development Agency and the regional development banks will in the future have to rely on those countries much more than before when seeking to obtain lending funds, even if—as I hope—the industrialized countries do not reduce their development assistance below its present level.

In the long run, therefore, the oil countries will also be facing the problem which now is accompanying development assistance rendered by industrialized countries. Mere financing of credit to developing countries will not be sufficient in the long run. The rate at which most countries of the Third World are accumulating capital resources of their own is so low that it is hardly possible to set in motion an accelerated process of self-development merely by offering them assistance in the form of credit, because most of their gain in productivity is eroded by their commitments to pay interest on, and repay the principal of, loans.

Thus, in the long run, there will have to be more genuine transfers of real resources in order to provide the less-developed nations with a genuine basis for continued self-development and thus also to decrease social and political tension. The oil-producing countries are now successfully making the most of their market position for obtaining a larger share, in real terms, in the world product. This share is considerably larger than all the development aid being provided by industrialized countries. Thus, some of the oil producers are automatically beginning to share in responsibility, a responsibility that they cannot shirk.

Obviously, the developments sparked by the increase in oil prices can hardly be brought under control unless there is a change in consciousness of the matter in public opinion. What is needed is a fundamental change in patterns of behavior both among individuals and among nations. This also applies to the question of a less wasteful use of each country's own resources and its attitude toward economic growth. The richer nations will have to realize that the product of national labor will not invariably be fully available for domestic distribution. It will not be easy to make the general public lastingly conscious of this fact.

Developments along these lines have already started in Europe. Of course, the model of the European Community is not capable of being applied automatically to other parts of the world. European integration is an historically necessary process that must be measured against European criteria. In principle there is already a substantial levelling out of differences in resources between the countries of Western Europe. The huge gap between incomes in the industrial centers on the line from Hamburg via the Rhine to the Rhône, including Northern Italy, on the one hand, and major parts of Southern Italy, Ireland and Scotland on the other, will stand up to a comparison with the corresponding gap between certain industrialized countries and certain developing countries. The United States has a compar-

able North-South problem. From the very outset of the move toward European unity there was no doubt whatsoever regarding the fact that political integration would have to keep step with a planned and controlled transfer of funds from the stronger to the weaker nations. Up to and including 1973, for instance, the Federal Republic of Germany, the main provider of finance for the European Community, had paid some DM9.5 billion—or approximately $3.5 billion at the current rate of exchange—net to other nations out of tax revenues. My country, whose financial capacity should not be overtaxed in the process, looks upon such payments as the cost of the integration venture.

On a worldwide scale, it will not be possible to reduce the differences in the levels of wealth unless the more advanced industrialized nations develop their own resources in close coördination with one another and with the primary-producing countries. If they fail to do so, the result might be social storms which could even seriously jeopardize world peace. If it can be assumed that most of the developed countries with a high level of prosperity have a great preference for peace, and that most of the less-developed countries have a high preference for increased wealth, there must be a level on which a convergence of preferences would stabilize the international political situation at a higher level of prosperity for both the wealthier and currently poorer countries. It would, therefore, serve the efforts to maintain peace on a worldwide scale if a comprehensive policy of economic coöperation were to be pursued rather than a policy of economic "apartheid."

Seen from this angle, time is short for working out sensible new rules for monetary affairs and trade. And seen from this angle, the cost of the peaceful development of the world economy will now have to be charged and paid.

Co-operative Solutions

NO one expected last month's special session of the United Nations Assembly on raw materials to yield positive results. But the fact that it was held at all is a reminder that international trade is indispensable to world prosperity. Whatever hampers the free exchange of goods and services, whether economic obstacles such as tariffs and quantitative restrictions or political attitudes, tends to depress living standards everywhere. When trading partners are in dispute, co-operative solutions – the phrase is Dr Henry Kissinger's – are therefore greatly to be preferred to confrontations. And nowhere is this truer than in regard to oil.

There is some danger that the quest for co-operative solutions in the field of oil may now lose some of its urgency because the oil trade looks as though it is returning to some semblance of normality. A rapprochement between the USA and the Arab states has led most of the Arab oil exporting countries to lift their export bans. Crude oil production in those countries is gradually returning to the pre-crisis level, and the worldwide scramble for supplies has thus abated. Posted prices, unchanged since 1st January, are frozen until the end of June and the grossly inflated "auction" prices have come tumbling down. In consuming countries government restrictions on the use of oil are being relaxed.

Nevertheless, there is little justification for complacency. Peace has not come to the Middle East. Oil is now extremely expensive and consumers are being forced to make drastic economies for lack of funds. Intractable balance-of-payments problems loom ahead. Talks about "participation" drag on, with host governments demanding ever-larger shares at bargain prices. There is much uncertainty about the future course of oil supplies and prices.

International companies can be relied upon to keep the oil flowing, so long as they are allowed to get on with the job. But they are at present working under severe handicaps and are very much at the mercy of host government decisions. In many cases they do not even know what their current liftings are going to cost, because "participation" agreements, when finalized, will be backdated. Furthermore, they have no guarantee that agreements signed today will not be torn up tomorrow. In the importing countries meanwhile, and especially in the United States, oil companies are being made the scapegoats, not only for OPEC's price-raising exercises, but also for the failure of the local government's policies.

It is time for governments of importing countries to consider more realistically what contribution they can make, especially in concert with other governments, to the stability of the international oil trade. Some suggestions are:

(a) They still need to avoid competitive actions that tend to bid up the price of crude oil. Fortunately, as the scramble for supplies has subsided, the glamour seems to have gone out of the bilateral deals that were all the rage a few months ago.

(b) They still need to encourage economy in consumption and the development of oil resources – and other energy resources – outside the OPEC sphere. The latest ideas circulating in the EEC on this subject are reviewed in a later article.

(c) Governments of the major importing countries are under obligation to seek co-operative solutions to the trading problems resulting from the inordinate increase in the price of oil. It is now generally recognized that a competitive struggle for export business, with the object of eliminating balance-of-payments deficits, could result in a downward spiral of devaluations, depression and unemployment. The "oil deficit" *vis-à-vis* the OPEC countries must be dealt with co-operatively if this disastrous outcome is to be avoided.

(d) In the banking sphere, international co-operation will be needed to ensure that any shifts in the financial balances of the oil exporting countries from one centre to another do not disrupt the world's financial mechanism. This and other financial aspects of the problem are discussed in the following article.

Importers and Exporters

But it will not be sufficient for western governments merely to reach agreement among themselves: they need to strive for a modus vivendi with the Arab governments. A more stable trading relationship between the oil importing and exporting countries, based on consultation, is indeed in the long-term interests of both parties, though this does not necessarily mean that it will be easy to secure.

The main importing countries have been forced in recent months to seek an insurance against further interruptions of Arab supplies by expensive preparations for the development of alternative resources. The size of the "premium" they are prepared to pay for this insurance will depend on their assessment of the risks involved; and close consultation with Arab governments might perhaps enable a more accurate assessment of the risks to be made.

A more stable trading relationship is also very much in the interests of the exporting countries. Oil is their primary source of income – and in financial terms they are now rich beyond their dreams. But what of the future? Most of them see the need to

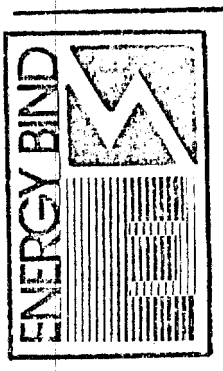
invest their oil revenues in the diversification of their national economies through the establishment of new industries. If this objective is to be realized they must depend heavily on the help of the industrialized nations, in the shape of training schemes, industrial know-how and a vast range of sophisticated equipment. They need a stable long-term relationship with American, European and Japanese firms, just as the latter need a stable supply of oil. The Russians are not capable of satisfying this need, and most of the Arab states would not wish to put themselves in Russian hands.

One particular industry which a number of Arab governments desire to establish is that of oil refining; and they are making agreements with American, European and Japanese companies to this end. It is being suggested therefore that the Persian Gulf will before long become a large refining centre, supplying finished products to Europe and Japan. But can countries which have had their supplies of crude oil cut for purely political reasons allow themselves to become dependent upon those selfsame sources for finished products? If an importing country has adequate refining capacity it may still hope to cover its essential needs if some of its crude oil supplies dry up. But if it is heavily dependent on imports of products it is much more vulnerable. Before the Persian Gulf can become a significant source of product supplies for Europe and Japan, the Arab governments must do something to rebuild the confidence they so rudely destroyed six months ago.

Some better understanding between Western and Arab governments is desirable also in the interests of the developing countries. These have been hardest hit by the five-fold increase in crude oil prices. The burden thus imposed on their finances is, indeed, equivalent to the total aid which this group of countries receives from the industrialized nations. And the latter group will find the maintenance of foreign aid more difficult because of the damage done to their own finances.

OPEC decided in principle last month to establish a fund from which cheap long-term loans could be made to developing countries. But ratification by the individual governments will take some time and, when this is forthcoming, the detailed arrangements will have to be worked out. To co-ordinate the assistance and to ensure that the most effective use is made of the funds available is a problem that cries aloud for co-operative solutions.

The need for international co-operation in the whole field of energy supplies is gradually being recognized. The EEC governments, for instance, are planning discussions with Arab states, with a view to holding a Foreign Ministers' conference. Unfortunately, the political leadership which is so sorely needed to deal with these international problems is not much in evidence in the USA or Europe today. Governments preoccupied with the problem of their own survival are not likely to take strong international initiatives. But we live in one world, and that world's economic and financial problems cannot be solved if individual governments are content to go it alone.



Energy R&D

. . . Utopian Talk, but No National Policy

GOVERNMENT EXECUTIVE
MAY 1974

By CRAIG POWELL
Contributing Editor

To Rep. Mike McCormack (D-Wash.), Chairman of the House Science and Astronautics Subcommittee on Energy, the year 2,000 is the most "realistic" target date the United States can set for significantly closing the Nation's "energy gap."

"We cannot," McCormack told *Government Executive*, "hope to see the emergence of inexhaustible environmentally acceptable sources of energy in this country until the turn of the Century. Those who banter around Utopian dates of 1980 to 1985 are merely engaging in political rhetoric."

He added, "Furthermore, for the Nation to meet the year 2,000 goal, there's a desperate need for a national energy policy and for one agency within the Administration to help develop and to administer the program, including comprehensive research and development."

Most top officials in the energy R & D arena concur with the Congressman in principle, if not in degree of bureaucratic reorganization needed.

While there is general agreement over the need to pull together a national energy policy, opinions differ as to the kind of energy R & D administrative structure required.

Most of the conflicts among powerful Capitol Hill energy policy figures, scientists, bureaucrats and interested industries in the past year have swirled around proposals to create a Department of Energy and Natural Resources (DENR), which would manage programs now lodged in the Interior Department and other agencies, and an independent Energy Research and Development Administration (ERDA), which would have nuclear research and management capabilities of the Atomic Energy Commission and an R & D role in fossil fuel and other energy source programs.

Atomic Energy Commission Chairman Dixy Lee Ray, Rep. Chet Holifield (D-Calif.) and others vigorously opposed submersion of the AEC and the splitting off of its licensing, regulatory, safety and environmental responsibilities to a new nuclear energy commission. On the other side of the fence have been Sen. Henry Jackson (D-Wash.) and others favoring inclusion of energy in an administrative entity handling all natural resource programs.

Internal Struggles

Adding to difficulties facing the massive reorganization proposals have been largely behind-the-scenes struggles among legislators with strong constituencies in one or another agency or bureau over where such entities should be relocated. These conflicts have been reminiscent of those preceding creation of the Environmental Protection Agency.

In the continuing debate over the energy gap and the research and development effort needed to guide the Nation out of its self-made quagmire, it often seems that "where one stands depends upon where one sits." Some with specific energy interests exclusively emphasize either near-term, intermediate-range or long-term solutions while others advocate combinations of the three.

AEC Chairman Ray, whom President Nixon asked to design a five-year, $10 billion R & D program, has placed main focus of Government planning activities on new technologies relating to nuclear power, coal and oil shale and considered the most promising means of moving toward national self-sufficiency in the 1980s.

Coal gasification, liquefaction and solid coal combustion, as well as economical and environmentally acceptable shale oil mining techniques, if coupled with proper conservation, could make a big difference.

But even if an expensive, all-out coal conversion and shale oil technological effort could be mounted, the experts believe, these programs would not really begin paying off until the 1980-1985 period.

Meanwhile, several promising conversion processes are being developed. Lurgi gasifiers, proven successful in Europe, are undergoing adaptation to burn U.S. coal. Experiments are being conducted in a few American pilot plants in an effort to make high Btu-rated gas.

The COED (Char-Oil-Energy-Development) process for converting solid coal into liquid fuel has been used to power the destroyer *USS Johnson* in tests conducted by the FMC Corp. for the Federal Office of Coal Research (OCR). And U.S. Bureau of Mines researchers are experimenting in collecting combustion gases from burning coal seams.

Meanwhile, the OCR, for years a sleepy Interior Department agency, has been revitalized to help revive the coal industry, and next year's OCR budget request is nearly 10 times the office's 1973 budget.

The National Bureau of Standards also is conducting coal research, along with its nuclear and other energy R & D work.

Intermediate-to-longer-range solutions are foreseen in the areas of solar, geothermal and nuclear breeeder reactor sources, but solar and geothermal sources are expected to be capable of meeting only a relatively small percentage of the Nation's total energy needs in the next 15 years.

Breeder Reactors

The nuclear breeder program, which has been criticized on environmental, technical and economic grounds, will use about 45% of total Federal energy R & D funds for Fiscal 1974.

The ultimate long-range energy source, of course, is expected to be thermonuclear fusion. Since fusion would require only hydrogen from sea water as fuel, it would be a cheap, clean solution.

Earlier this year, the AEC delayed its timetable for producing commercial fusion power until near the turn of the Century because of budget cuts ordered by the Office of Management and Budget.

McCormack and others are concerned about the piecemeal manner in which the Nation has been dealing with the many-sided energy problem.

A nuclear researcher at the Atomic Energy Commission's Hanford, Wash., facility for 20 years and one of only a handful of scientists elected to Congress, McCormack wonders how well the country is being served when he studies activities and policies of the myriad of Government offices and agencies that get a slice of the energy R & D pie.

Incredible as it might seem, the number of Executive Branch Offices and congressional committees and subcommittees involved with energy problems is now approaching 100.

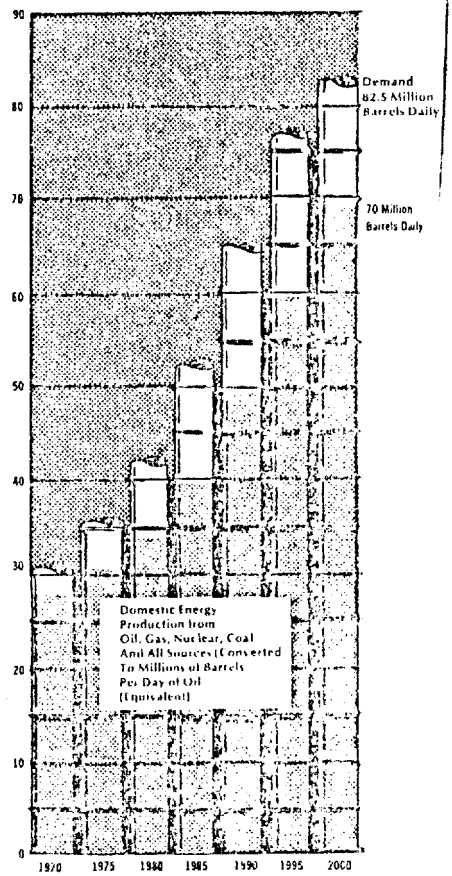
Asked about this fragmentation of ef-

fort, McCormack said, "There simply is no single national energy policy. This is an unfortunate fact of life we have to accept for now, and work to change.

"There has been an assumed policy in the past, but it has operated as though energy sources were inexhaustible, free and had no impact on the environment."

But he pointed out that establishing such a policy will be a "fantastically complicated undertaking . . . not so simple as it might seem at first blush."

He said, "The policy must be based on the best and most factual information available. We must do away with fantasies such as 'solar energy available soon' and 'geothermal energy available soon.'



Government and industry estimates set U.S. energy needs by 2000 at the equivalent of 82.5 million barrels of oil daily, with domestic production from all sources 12.5 million equivalent barrels less. The difference represents shortages and imports.

"It must be a policy that will assure optimum environmental protection. However, blind emotionalism must not keep us from achieving the advances and production needed."

McCormack added with emphasis, "Our most urgent need is for a total systems approach to the problem—today and in the future.

"Without such an approach, catastrophe is inevitable."

He considers some Administration policies and actions in the energy area as beneficial and others as misguided.

McCormack believes that reorganization of the White House science advisory apparatus last year was a plus. In the shift, the President abolished the Office of Science and Technology and his Science Advisory Committee and made Dr. H.G. Stever, director of the National Science Foundation, his science advisor. Stever created his own Office of Energy R & D Policy to support Office of Management and Budget energy policy decisionmaking.

The Congressman also credits the Federal Energy Office staff under William Simon, who had to spend most of his time putting out day-to-day fuel crisis brushfires during the agency's brief existence, with making a modest start toward guiding longer-range programs.

An energy R & D office headed by Alvin Weinberg has been established, and Weinberg has set up an interagency committee comprised of top R & D experts from other Federal agencies. The group has been meeting to review and update the five-year energy R & D plan and to tailor it to new demands of the President's "Project Independence" blueprint.

Weinberg, a onetime adviser to Chairman Ray, previously was known to be at odds with Ray staff members over approaches to developing early recommendations for long-range R & D strategies.

McCormack and others have noted that realistically, the OMB, not the FEO, plays the major role in shaping energy policy, and that the OMB more properly should be involved in year-by-year fiscal matters, rather than in long-range R & D planning covering two or three decades.

Management of the energy program, in McCormack's view, should be done by a cabinet level Department of Science, Energy and Technology embracing all agencies. Its job would be to attack energy problems on a broad front by amassing data on all dynamic aspects of fuel and energy sources and technologies, and consolidating and spurring energy research in national laboratories and through grants to industry and universities.

He feels strongly that all institutions and organizations outside of Government have financial and moral obligations to participate.

"The relationship between Government, industry, universities and non-profit establishments should be a loose, informal one," he said.

"As we look forward, we should be working together for the systems approach. Industry and the universities should conduct their own R & D and demonstration efforts. The Federal Government would, of course, lend funding assistance to projects when in the best interests of both parties.

"There is much to be gained from such a relaxed cooperative effort. With proper financing, this approach could make us self-sufficient around the year 2,000."

McCormack is not hurling brickbats at current efforts to get R & D programs untracked; to the contrary.

He is more than pleased that his solar energy bill passed the House, 253 to 2. The legislation would authorize $50 million over five years to subsidize development and manufacturing of solar heating and cooling systems for homes, factories and schools.

Similarly, he is confident of success in moving an $80 million, six-year geothermal energy authorization bill through Congress.

The OMB has budgeted the joint Government and private effort in energy R&D at between $10 and $11 billion over the next five years.

"This amount, I feel, approaches the right magnitude, assuming the even larger energy R & D investment expected from the private sector," McCormack said.

But while he can live with the current funding level, McCormack, as a nuclear scientist, does feel there should be some reordering of priorities.

"Nuclear energy," he said, "provides about 4% of the electricity today, and by the end of the year, the figure should rise to about 8%. But by the end of the Century, 60% of the electricity should be nuclear-produced. Nuclear dwarfs any other potential source."

In his opinion, underfunded programs include the high-temperature gas-cooled reactor (HTGR) program, the breeder reactor program, the fusion program from a materials and engineering standpoint, and basic research and development in some other areas.

He also said, "There probably is too little organization as far as coal R & D is concerned. We need more sharply-defined programs than we have at the moment. We should emphasize these areas more instead of throwing money at words—biosynthesis, ocean temperature gradients and the like."

While the National Science Foundation is primarily concerned with intermediate and long-range programs, NSF Director Stever fully agrees that energy R & D must be examined and evaluated "from a total systems point of view."

The NSF position is summed up in the expressed hope that "the process of developing the detailed R & D needs (a process including many committees and individuals) will result in systems type considerations leading to a more precise

definition and refinement of R & D goals than we have been able to arrive at previously."

The NSF has undertaken two major programs: RANN (Research Applied to National Needs) and ISRU (Intergovernmental Science and Research Utiliza-Utilization).

RANN would shorten the lead time between scientific discoveries and their applications. ISRU's aim is to provide an effective mechanism for communicating to RANN the problems of society as perceived by state and local government agencies and industry.

Acknowledging that possibly 50% of the total energy generated in the U.S. is wasted, RANN directs its program toward points in the system at which major improvements are possible by making better use of resources, introducing new capabilities and reducing losses.

According to Dr. Alfred J. Eggers Jr., NSF's assistant director for Research Applications, "We are working on solar and geothermal energy to minimize dependence on foreign imports. We support efforts to make better use of America's energy resources, especially coal, and to improve efficiency in the areas of energy conversion and storage, energy transmission and fuel transportation, and energy systems."

Donald Beattie, head of NSF's Directorate of Advanced Energy Research and Technology, indicated in an interview that NSF believes in a single energy management agency, but is not adamant as to the form it should take.

"For instance," he said, "my directorate could work very well under the proposed ERDA, and I am sure there are other agencies that could do so as well."

He added, "funding in our principal areas is increasing very well. In Fiscal 1974, we had $13 million for solar R & D and $4 million for geothermal, with about an additional $5 million divided between areas tangent to the two.

"In Fiscal 1975, the request has risen to $50 million for solar and $22 million for geothermal work. The geothermal funding will probably be equally split between the NSF and the AEC, with NSF acting as coordinator. There also is some $20 million allocated to other areas for a total energy R & D funding request of $94,900,000 for 1975, about six times that of 1973.

"We are surprised at the interest industry has shown in Federal solar programs. In many areas, the building industry would like to use solar heat. While the Government should not be funding any speculative efforts, solar is most important because it not only saves fossil fuels, but also is most benign in its environmental impact. So we could spend more money if we had it. However, the added emphasis in 1975, is good balance between 'crash' and 'orderly' programs."

Beattie said industry does need new technology more quickly than risk capital is able to provide it, and that this is an area into which NSF could put more money to bring the technology on line. Almost all of NSF's budget is allocated in the form of grants or contracts (60% to universities and non-profit institutions and 40% to industry).

"Energy," Beattie said, "is the biggest problem outside of war. Further, we must learn to use all energy generated. With steam plants generating electricity at 40% of efficiency, we must improve 'topping' and 'bottoming' cycles (higher temperatures for more heat and use of exhaust heat).

Environmental and institutional problems are more complex than is generally believed, he noted. Construction of an energy plant in California's Imperial Valley, he pointed out, requires approval at four different levels of authority.

"What happens," Beattie said, "if one builder uses solar heat in a shopping center only to have another entrepreneur build a high-rise building nearby that blocks the sun? The builder of a big housing development can go bankrupt waiting for the plumbers and electricians to settle an argument over who installs the solar system. Who owns geothermal heat? Is it under Federal, state, local or private ownership? These are not simple questions, and they are without precedent."

Total Systems Approach

The requirements necessary to achieve effective energy research and development, then, can be summed up fairly easily. Fundamentally, there is a need for a comprehensive national energy policy, as well as a single management agency to implement it, using a total systems approach.

McCormack said, "The United States can become independent of imports any time Americans are willing to cut consumption of oil and other fuels down to what they already produce.

"But true energy independence means having enough domestic energy for a growing industry, a strong defense and reasonable standard of living."

And Stever, in congressional testimony, noted, "I think we are in part limited by ideas and we are in part limited by the total amount of money.

"Society has got to determine how serious this balancing problem is going to become over these years. It is going to be a matter for Congress and practically every other unit of our Government, of our people; every institution of our society will be involved with this problem."

The debate will produce "solutions" that will prove to have bugs in them, and be dropped for newer priority alternatives after costly, time-consuming testing and evaluation efforts.

Obviously, the many conflicting viewpoints on the course of energy R & D are not going to be sorted out and bundled up into a compact, cohesive national energy policy package overnight. Meanwhile, the arguments will continue to rage.

Can future national energy needs be met by any measures short of a huge Manhattan or Apollo-type project? Should any such project be lodged in an existing or a new super-agency?

Should natural resources and energy be lumped together or separated in any program consolidation? Is the OMB's role in energy R & D too large? What kind of Federal guarantees should industry have against the possibility of going broke if the bottom drops out of a new energy technology market sometime in the future? There are many more equally difficult questions. GT

Oil and the Cash Flow

By C. Fred Bergsten

WASHINGTON—Arab oil earnings will rise by $65 billion this year, the amounts will get even bigger in following years, the balance-of-payments positions of the consuming countries will plunge into the abyss, the international monetary system will collapse, the Arabs will buy up all our companies—so goes the refrain heard frequently since the dramatic increase in oil prices in December.

There are indeed extremely serious consequences of the oil crisis:

Inflation has spiraled upward; recessions are possible if governments mistakenly cut back aggregate demand to cope with shortages of supply; countries producing other raw materials have been encouraged to emulate oil exporters; a few of the poorest countries will suffer serious deprivations, and political tensions deriving from the energy problems could intensify among countries.

But the international monetary situation adds relatively little to the problem. No industrial country will go bankrupt. The monetary system will not collapse. The prophets of financial doom simplistically compare the increase in each country's oil bill with its existing monetary reserves. They note that United States' imports will rise by $15 billion and that its reserves are $12 billion, and conclude that the United States cannot pay—even for one year.

Such observations are absurd. First, they ignore that a sizable share of the increased earnings of the oil-exporting countries will be spent on imports from the industrial world. Some oil countries will spend virtually all of their increased earnings themselves; all are rapidly revising their development strategies and military plans to do so. Some will lend their money to others who will quickly spend it.

So even the trade balances of the industrial world will not decline by more than, say, half of the increase in its oil bill this year. Those trade balances will be even better in subsequent years, as any further increases in oil countries' earnings are more than offset by their increased imports. Indeed, the United States appears to have already reached its new plateau of oil imports in April at an annual rate of $27 billion), but there was a surplus in over-all trade as exports reached an annual rate of almost $100 billion.

Second, the prophets of doom confuse the balance of trade and the balance of payments. They ignore the simple but central fact that the oil exporters must invest in the industrial world any of their increased earnings that they do not spend. The Arabs will not bury the money in the ground. Thus, there can be no deficit in the balance of payments of the industrial world as a whole.

To be sure, the flow of money from the Arabs will not necessarily go to individual industrial countries in amounts that precisely match the decline in the trade balance of each. Some industrial countries may wind up with a sizable surplus; others may have deficits.

But this problem is solvable solely through action by the industrial countries themselves to recycle the money to where it is needed. Much financial recycling will take place through normal market forces. Some can be handled by government borrowing in the private capital markets.

The Eurocurrency markets—those that lend a variety of currencies from European centers—have grown as rapidly in several past years as they will have to grow now, and the United States capital market is now fully available with the abolition of controls. Together, they can handle the vast bulk of the money on their own, and are in fact doing so even as the full amount of the higher oil earnings is now being invested.

The rest of the money can move through such existing intergovernmental institutions as the swap network among central banks and the International Monetary Fund. Indeed, such backstopping will be needed for any individual borrowers whose creditworthiness comes under doubt in the private market. But Italy is the only such case to date.

In any event, no special cooperation with the oil exporters is needed in this area. It helps for the International Monetary Fund to borrow from them to help finance members' deficits, but there is no reason to give the oil exporters better terms than other lenders.

Doubts are sometimes raised about the plausibility of such smooth handling of the oil money. First, it is feared that the money, like the oil itself, will be "politicized." But it is highly doubtful that the Arabs will try to promote monetary instability by shifting their funds from place to place. Once invested, the very size of the funds will make it increasingly difficult for the Arabs to liquidate quickly without incurring substantial losses. If they were to make such shifts, the money could readily be recycled through the swap network.

Second, it is argued that some industrial countries may be unwilling to accept the needed shift in the structure of their balance-of-payments positions. It is certainly true that all of their trade balances will deteriorate and be offset by increases in capital inflows. But such a situation might well be sustainable indefinitely since the capital inflow will by definition continue as long as the trade imbalances do. And it is certainly sustainable for the interim period until energy conservation and the development of new sources of oil and alternative forms of energy are brought into play to change the energy situation to its roots.

Third, some industrial countries fear that many of their companies will be taken over by the oil producers. They need not. Most of the oil countries will soon find ways to spend most of their income on goods and services. And since they have decided to nationalize most of the foreign business concerns within their boundaries, they are quite unlikely to seek majority control of firms within the boundaries—and legal jurisdiction—of others. Even if they wanted to, they do not have the manpower to exert much effect on the operations of very many firms anyway. So the present pattern of diffused and highly liquid portfolio investment in a wide range of financial assets is likely to persist.

Finally, the proposed solution to the monetary problem requires the industrial countries to agree on at least a broad pattern of exchange-rate relationships among them, around which the financial flows can be recycled. It will be tricky to reach such agreements, which amount to taking oil out of each country's balance of payments for the purpose of determining exchange rates.

However, there was already evidence of progress toward such agreements before oil prices soared. They are a necessary component of any stable monetary system for the future, and were thus already at the top of the agenda for monetary reform. And history clearly shows that the alternative of competitive exchange-rate depreciations will not work.

It seems clear from the series of official pronouncements on the subject that all countries have recognized these facts and that this latest crisis—like most past crises—will speed rather than derail needed monetary reform. There is good reason for confidence that the mistakes of the nineteen-thirties and the nineteen-sixties can be avoided in resolving the latest international monetary crisis.

C. Fred Bergsten is a senior fellow at the Brookings Institution.

NEW YORK TIMES
3 June 1974

ENOUGH GASOLINE— WHAT IT WILL COST

Interview With John Sawhill, Federal Energy Chief

Can Americans safely plan on 1974 vacations on wheels? Will power blackouts be avoided? What's ahead for natural gas, other fuels? The top policy maker on energy came to the magazine's conference room with answers.

Q Mr. Sawhill, will there be enough gasoline this summer so that Americans can plan to take vacations as usual?

A The answer to that question is a qualified yes. We expect sufficient gasoline to be available for people to take vacations if they continue to practice conservation. Now, while that may not mean the kind of rigid conservation measures we had to have during the embargo, it nevertheless still means that people should continue to observe the 55-mile-an-hour speed limit and should keep on car pooling.

Q Would it be safe to plan a long trip—say, from one coast to the other and back?

A We want people to drive and use their cars in an energy-efficient way. And it's more energy-efficient to take the train or the bus or perhaps even the airplane for longer trips than it is to take an automobile. So we'd rather see families use one of these alternative forms of transportation if they're going to take a long trip.

Q How much higher will gasoline prices go?

A I think prices probably will begin to stabilize at about current levels. We've seen some increases in May due to the increasing proportions of high-cost imported oil in our total mix of fuel supplies in this country.

Q What is the average price of regular-grade gasoline per gallon across the country now?

A In April it was about 53 cents per gallon. We predicted some months ago that the price would not go much over 60 cents. I still hold to that forecast. There are instances where some stations are charging prices higher than 60 cents because they have a higher component of the expensive imported oil in their supplies.

Q Do you think gasoline will go to a dollar a gallon?

A I think we can forget about dollar-a-gallon gasoline. The only way in which I could see that happening would be if we had a very substantial price increase in the oil that we import. I regard the chances of such an increase as highly unlikely.

Q Do you see any sign that higher gasoline prices are prompting people to curb their driving?

A To date, we haven't seen significant reductions in driving as a result of higher prices. The Federal Energy Administration has been watching traffic flows around the country. For example, we've been monitoring traffic flows at the tunnels and bridges in New York City, and we've seen traffic return to approximately the pre-embargo levels in recent weeks. It's not quite back up to what it was at this time a year ago, but it's beginning to move in that direction.

Q Are State and local governments enforcing the 55-mile-an-hour speed limit?

A We don't have accurate reports on that, but just from talking to people in the Federal Energy Administration, my impression is that enforcement is not as strict as it was during the embargo.

Q If people do start slacking off on conservation efforts, will you take measures to make them cut back?

A We can't take punitive measures, as such, but our allocation program would automatically go back into effect if supplies dwindle, and spot shortages could show up around the country.

Q Are you saying that lines at gasoline stations could reappear if conservation doesn't persist?

A Yes, that's very possible.

Q What would happen if the Arabs suddenly reimpose the oil embargo on the U. S.?

A If we had a reimposition of the embargo, we probably would find ourselves in about the same situation we were in last winter. We would have to begin reducing allocations of gasoline and, in some cases, of other kinds of fuels as well. And we would have to step up conservation programs. We're still somewhat vulnerable to a reimposition of an embargo.

Q Are we as vulnerable this time as last autumn, when the embargo was first applied?

A I don't think we're quite as vulnerable. The reason I

John C. Sawhill, 37, has moved in and out of business, academic life and Government during his career. A native of Baltimore, he holds a Ph.D. in economics, finance and management from New York University. Before joining the Government in 1973, Mr. Sawhill was an executive with Commercial Credit Company. Last month, President Nixon selected him to succeed William E. Simon as Administrator of the Federal Energy Administration.

USN&WR

CPYRGHT

ENOUGH GASOLINE FOR JET WILL BE SAVED

[interview continued from preceding page]

say that is I think we've learned now how to manage a shortage much more effectively.

Last winter we had 200 people in the Federal Energy Office when we started in early December. Today we have over 2,000 employes, and these people are much better trained and much better acquainted with the regulatory program. Last winter we had to start a program from scratch. Now we have one in place.

Q Do you think the Arabs will reimpose the embargo?

A I think that is very unlikely.

Q Even if the Mideast war should flare out of hand again?

A Situations can change very rapidly in the Mideast—and this is really in Secretary Kissinger's area rather than mine—but my understanding from our own staff of international experts is that a reimposition is not likely.

Q Is the danger of gasoline rationing past?

A The likelihood of going to rationing right now is near zero. If there were a reimposition of the embargo, we would hope we could avoid rationing, as we did during the last embargo. However, we have to maintain the capability to go to rationing.

Q Can brownouts and blackouts be avoided this summer when the electricity demand for air conditioning in many parts of the country hits a peak?

A Our staff is now taking a comprehensive look at the whole utilities industry. The early reports indicate that we will be able to avoid brownouts and blackouts, but here again, we need energy conservation. People must continue to use less electricity for heating, air conditioning and lighting. We are asking Americans to turn up their air-conditioning-system thermostats to 78 degrees this summer and, to set an example, the Federal Government will do this in all of its office buildings.

We expect that fuel supply and generating capacity will be adequate this summer. It varies around the country, and it could be that there will be spot shortages, but I hope that people will [illegible] We've seen some fall-off in that, as we've seen fall-off in the conservation of gasoline.

Q Why should people continue to conserve electricity and natural gas when the result often is that rates are raised, because utilities say they aren't taking in enough money?

A In those instances, I think we're seeing utilities which have been hit by substantially higher fuel costs. They're going to have those higher fuel costs whether people conserve electricity or not. As a result, if people don't conserve electricity, their bills may go even higher.

"DRILLING ACTIVITY IS UP"—

Q Oil-industry officials have long claimed that higher prices would stimulate more production of oil and natural gas. Yet prices, especially of oil, are up sharply and production is not increasing. Why is that?

A It takes time for higher prices to be translated into higher production, because it takes time to get drilling rigs out into the oil fields, to drill the wells, and to develop the fields that are subsequently produced.

Drilling activity is up substantially in this country. It was up 10 per cent in January '74 over January '73—20 per cent in February, and 30 per cent in March, which indicates to us that the higher prices will eventually result in more production.

Q Are you forecasting an upward trend in production of crude oil?

A Crude-oil production in this country actually began declining in 1970. Exploration started declining in 1956. Now with the increase in exploration activity, we would expect to see an upturn in crude-oil production, particularly if we can begin exploring in new areas on the outer continental shelf, such as off the Atlantic—especially along the northeastern coastline—and other frontier areas like the Gulf of Alaska.

Q How soon do you expect this new oil to begin flowing to the market?

A We could see increased production as early as next year, depending on how rapidly new offshore oil fields are developed, and how quickly increased secondary and tertiary recovery is expanded. However, it may take a few years before we see a really significant upturn.

Q Is there any prospect that oil imports can be reduced?

A Imports, I believe, will keep going up for a few years, then begin to stabilize and decline. By 1980, we hope to be in a position where we're not as dangerously dependent on foreign imports as we are today.

Q What is the production outlook for natural gas?

A It is not very favorable right now. The problem in natural gas is that the regulated prices have reduced drilling to the point where we are using natural gas faster than we are discovering new additions to our reserves. This is a serious problem, because about 50 per cent of industrial energy in this country comes from natural gas. We face serious curtailments in that industrial usage over the next six or seven years. We could see curtailments of a large percentage of this gas for industrial use if we don't move quickly to bring on new supplies.

The solution to the problem is to deregulate the price of new natural gas at the wellhead, and encourage producers to drill more natural-gas wells which should ultimately lead to greater supplies.

Q Is there likely to be deregulation?

A I see evidence that the Congress is moving closer to some kind of deregulation bill. It could pass this year.

Q Will that mean higher natural-gas prices to consumers?

A Deregulating the price of new natural gas and maintaining fixed prices on the long-term contracts for old gas

KEY POINTS MADE BY MR. SAWHILL

Gasoline prices: "We predicted some months ago that the price would not go much over 60 cents. I still hold to that forecast."

If Arabs boycott U. S. again: "We're still somewhat vulnerable to a reimposition of an embargo."

Brownouts and blackouts: "Fuel supply and generating capacity will be adequate this summer. . . . It could be that there will be spot shortages."

Oil-company profits: "We favor a measure that would tax away excess profits that are generated as a result of the higher crude prices."

Project Independence: "The objective is not to have zero imports by 1980. It is to remove the dangerous degree of dependency on imported oil."

The oil-import bill: "If this year's import bill causes serious problems, what will happen if we let imports rise to double the 1974 level by 1980?"

would not mean significant cost increases to consumers quickly. The average consumer spends $150 to $180 a year for his heating bill if he's using natural gas. We believe that deregulation would increase annual consumer heating cost by $8 to $10 a year.

Let me add, incidentally, that the wellhead price of natural gas is about 25 cents per thousand cubic feet, yet the individual consumer pays from $1.50 to $2 per thousand cubic feet. The bulk of the consumer cost is clearly the result of transportation and distribution costs.

Even if the wellhead price of natural gas doubled after several years, it would only result in a 12 to 20 per cent increase to the consumer.

Q There are recurrent charges that the industry is holding back on the production of oil and of natural gas to keep prices high. Is there any evidence of this?

A We have no evidence that production in this country is being held back or that wells are being capped in anticipation of higher prices. It is true that there's some production in this country that is not being developed because it's uneconomical to do so at current price levels. That's particularly true in the case of natural gas. In fact, there is no evidence that oil or gas which is economical to produce at current prices is not currently being produced.

Mr. Sawhill's advice: Keep the new, lower speed limits.

Q Why do prices for gasoline and other fuels have to be so high when oil companies are making record profits?

A The oil industry, actually, has a return on investment which is about comparable to that of other industries in this country. We have analyzed the 1973 profits of the oil companies, and we found that 85 per cent of the profit increase came from foreign earnings as opposed to domestic earnings.

In effect, the oil companies are making very large profits abroad and reinvesting that money in the United States to build new energy facilities, to explore for more oil and do the things necessary to bring on new energy supplies. We think this is a very constructive development.

Q Do you think oil-industry profits are excessive?

A The first-quarter profits indicated a return on investment of roughly 15 to 16 per cent. That's somewhat above the national average for industry profits. I don't think, however, that you can measure industry profits on the results of one quarter alone. If we look at the profitability of the oil industry over the last five or 10 years, we do not feel that it has been excessive.

Q Do you favor an excess-profits tax on the oil industry?

A Yes. We favor a measure that would tax away the oil companies' excess profits that are generated as a result of the higher crude prices. Our plan, however, contains a provision that if the oil companies reinvest this money in domestic exploration or production, then the tax would be rebated.

The tax bill approved by the House Ways and Means Committee contains an excess-profits provision quite similar to the Administration's proposal.

Q Mr. Sawhill, just what are these "integrated" oil companies that seem to dominate the industry?

A An "integrated" oil company is one that operates in all phases of the oil business, including production, refining, transportation and marketing—all the way from the petroleum geologist to the gasoline tank of your car.

Q If these integrated companies were broken up, would there be more competition that would benefit consumers?

A It might make for more competition, but I'm not sure that it would benefit consumers. Consumers do benefit from the experience and management of the large, integrated oil companies and their access to capital markets and their technical know-how.

We're doing a comprehensive study of competition in the oil industry right now. At this point, I would certainly feel that any kind of major breakup of the oil companies would be a mistake.

We may want to take some actions, however, to limit their growth in certain segments of the market. And we especially want to make sure that the majors do not take advantage of the current shortages to eliminate competition from independent refiners or marketers.

OPPOSED: A FEDERAL OIL COMPANY—

Q Do you favor creation of a Government oil-and-gas company to serve as a yardstick for the industry, as the Tennessee Valley Authority is said to do for the utility industry?

A We do not favor this proposal. As a matter of fact, I was quite interested in reading the other day an article by the president of the Sierra Club which characterized this proposal as a "rubber yardstick." He felt that it would not be an effective measure. It's not often that we get support for our views from an environmentalist organization like the Sierra Club.

The proposal that has been advanced by Senator Adlai Stevenson [Illinois Democrat] would provide a 50-million-dollar-per-year subsidy to get this Government company off the ground. It would also provide significant tax advantages and advantages in leasing of federal land to this company. Therefore, it would have an unfair competitive advantage and be a very uneven yardstick at best.

Q You've said that President Nixon's Project Independence—the goal of energy self-sufficiency in this country by 1980—would be difficult, if not impossible, to reach. Do you think it ever can be attained?

A It really depends on how you define energy self-sufficiency. We believe that we can attain the goals of Project Independence, but the objective is not to have zero imports by 1980. It is to remove the dangerous degree of foreign dependency on imported oil that we have had in this country. I believe we can reduce our dependence on foreign oil significantly by 1980.

Q Do you think it can be brought below the current level of 35 per cent or more?

A I certainly do. President Nixon has given the Federal Energy Administration a mandate to prepare for him a comprehensive plan outlining the objectives of Project Independence and the detailed work necessary to achieve them.

We hope to have this plan in front of the President by November 1.

In this plan we will be discussing the legislation needed to achieve the goals of Project Independence, as well as the budgetary resources required and the new types of relation-

[interview continued from preceding page]

ships that will have to be forged between the Government and private industry. This will be a major task. But we've undertaken major tasks in this country before, such as the Apollo space program.

There are really two dimensions to the Project Independence effort: One is the effort to bring on new energy supplies; the other is conservation. I believe that, with higher prices for energy—as well as with a conservation ethic, which I hope to see become a permanent part of our lives—we will be able to reduce our growth rate in energy consumption from the current level of 4.8 per cent per year back to something like 3 per cent, or maybe even less.

Q By higher prices, do you mean higher than those that now prevail?

A No, I don't think we need to increase oil prices above present levels to achieve the objectives of Project Independence. Current product prices seem sufficient to enhance our conservation efforts and certainly have boosted the trend to smaller, more-energy-efficient cars.

As for oil prices, they appear to be high enough to stimulate new drilling activity. Again, however, we simply can't afford to hold natural-gas prices at a level that discourages exploration as well as conservation measures with our most premium fuel.

DEVELOPING NEW ENERGY SOURCES—

Q What new sources of energy can be most quickly developed in this country?

A There are really four: coal, nuclear, oil and gas. As far as coal is concerned, we sit atop the free world's largest coal bin. We have 1 trillion, 600 billion tons of coal resources in this country. That is 48 per cent of the free world's resources.

Q Can coal production be tripled in this next decade, as some energy experts are saying it must be?

A We'd like to see coal production increased at about 10 per cent a year. Unfortunately, we aren't off to a very good start. We had hoped to raise production from slightly under 600 million tons per year in 1973 to about 650 million tons per year this year. So far the gain through the middle of April has only been about 8 million tons. So we are falling somewhat short of our objectives.

Nevertheless, I believe with good strip-mining legislation and improved technology that we can significantly expand coal production.

Q Do you think that strip mining can be expanded fast enough to get a 10 per cent increase in coal output without wrecking the landscape?

A I wouldn't expect all of the increase to come from strip mining. I think a substantial portion of it can come from deep mining. One of the things the Government needs to do is to improve deep-mining technology, and this, of course, will require an effort on our part to encourage the industry to adopt improvements, and literally to bring on line a new generation of technology that will make coal mining safer and environmentally sound. I would like to see the Government, perhaps in concert with the industry, demonstrate the benefits of improved mining technology.

Q Would you set up a federal corporation to go into coal mining?

A I don't think that will be necessary, but I do think the Government will have to provide economic incentives so that coal companies can expand rapidly and take advantage of some of the new technology that is available in the world today.

Q Do the prospects for shale oil look promising?

A I think shale oil is promising in the long run, although we don't expect to see significant production by 1980 or even by 1985. We have to build the pilot plants and the first commercial-sized plants, and study the environmental impact they have before we can really swing into full-scale shale-oil production.

Shale oil is still a question mark.

Q What about atomic power? It's been plagued with one problem after another—

A The real reason why atomic power has not lived up to its earlier expectations has been a combination, I think, of Government red tape and lack of industry expertise. We're moving on both fronts right now. We have proposed legislation to the Congress which would simplify the licensing process for nuclear plants. We're about to propose an energy-facility-siting bill which should expedite the siting of nuclear facilities.

It's incredible when you consider that it takes nine to 10 years to bring a nuclear plant on line in the U. S., in comparison with four to five years in France or Japan. In fact, after an almost three-decade commitment to nuclear power, we still get only 1 per cent of our total energy from the atom. I think we can do better.

On the industry front, there are a number of exciting new developments which should enable companies to manufacture and construct nuclear plants much more rapidly than they have in the past. There's a great deal of work going on in the area of standardizing the design of plants.

Q Congress and the White House, during the two or three years of the energy crisis, have seemed to talk a lot about what needs to be done, but have had trouble agreeing on the necessary laws. Do you think there will be more cooperation?

A Maybe I'm optimistic, because Congress has just passed the bill creating our Federal Energy Administration to replace the Federal Energy Office. That will give us an agency which for the first time will bring together energy policy and program implementation under one roof. It will give us a base from which we can launch the programs necessary to achieve the goals of Project Independence.

It will also give Congress one agency to which they can look for energy policy. We have been working with Congress on several bills; for example, the natural-gas-deregulation bill. The prospects for that look good.

There's strong sentiment in Congress to get on with some of the legislation we've proposed in the conservation area, such as the bill for mandatory labeling of appliances as to energy efficiency.

I believe we can also work closely with Congress in developing good strip-mining legislation.

HOW TO PAY FOR IMPORTED OIL—

Q One economist has estimated that the U. S. bill this year for imported oil will come to around 20 billion dollars, compared with 7.5 billion in 1973. Where are we going to get the money to pay this bill?

A We will have to get the money through expanding exports, or by encouraging and allowing the OPEC [Organization of Petroleum Exporting Countries] nations to "recycle" their investments here in the U. S. Expanding exports of food, for example, could be one source.

The balance-of-payments implications of the current energy problem are critical. If this year's import bill causes serious problems, what will happen if we let imports rise to double the 1974 level by 1980? This is the reason why it's important for us to get on with the job of achieving the goals of Project Independence. [END]

The Hard Energy Choices Ahead

By RALPH E. LAPP

The United States is entering a disquieting new era in its economic history. We are moving out of an era when energy was easy to find and easy to exploit—a fundamental development whose implications will reach well into the 21st Century.

The Arab oil embargo has ended, the long lines at the service stations have disappeared at least temporarily and the short-run "energy crisis" has eased. Yet we remain an energy-short nation even now and the long-run trends are not comforting. An analysis of this nation's future energy needs leads inevitably to these conclusions:

—There is no way we can meet the self-sufficiency goals of "Project Independence" by President Nixon's 1980 deadline, and probably not even by 1985. Dependence on foreign oil will be a brutal fact of life for at least a decade, more likely two.

—There is no way we can sustain the giddy growth rates in energy consumption of recent years. Even under the best of circumstances energy conservation is going to be mandatory. We are going to have to adapt our transportation system—indeed our whole system of generating and using energy—to an age of energy scarcity, and this will require a whole series of profound political and economic adjustments.

—There is no alternative, in the long run, to primary reliance for our energy needs upon coal and atomic power. Simultaneously, we are going to have to move toward an "all-electric" economy, perhaps even to the extent of eventually substituting electric automobiles for gasoline-burning ones.

Increasing U.S. energy consumption has accompanied a growing Gross National Product for well over a decade. Last year the U.S. consumed an amount of energy equivalent to the heat produced by burning 3 billion tons of high-rank coal or 13 billion barrels of oil. Actual oil consumption in 1973 amounted to 6.3 billion barrels; add to this the natural gas consumed and it develops that 77 percent of our energy was delivered in the form of pumpable fuels.

Growth Every Year

Last year our energy consumption increased 4.8 percent over that of the year before, and consumption increased 4.9 percent the year before that. If we were to continue growing at this rate, then in 1984 we would be using the energy equivalent of 24 billion barrels of oil annually. Of course, we could get some of this energy from non-petroleum sources, but even so, we would need some 11.6 billion barrels of petroleum products in 1985.

There is no way we can get those 11.6 billion barrels, unless the Arabs decide to act against their own self-interest and authorize greatly stepped-up production at low prices. There is no way we can get even the 9.5 billion barrels that the National Petroleum Council estimates we will need in 1985. And there is no easy way we can make up the difference out of U.S. resources, either. America, to repeat, has run out of easy energy sources. It must now grapple with the tough choices.

Wh[illegible] petroleum resources are not fully exploited, they hold little promise of keeping pace with demand. This means we must now look to coal, lignite and oil shale, all of which, unfortunately, must be mined. Mining, of course, entails many problems—not the least of which is the sheer volume of earth which will have to be moved. For example, production of 1 billion barrels of synthetic crude oil from oil shale would require mining and processing 1.7 billion tons of the shale, not to mention disposing of the talc-like waste. By way of comparison, the U.S. coal industry mines only about 0.6 billion tons annually.

The Fort Union Formation in the Upper Missouri Basin holds a vast treasure of sub-bituminous coal, some of it reaching 100 feet or more in bed thickness. Luckily, it's low in sulfur and is quite close to the surface; and, because coal is a close chemical cousin to oil, it can be liquefied and/or gasified.

As we move toward massive reliance upon coal and atomic energy, we also will move toward an all-electric economy.

But will a Northern Plains state like Montana allow the industrialization that could convert it into a new Texas on the U.S. energy map? Can the necessary water be found to operate huge synthetic fuel plants? What price-per-barrel has to be assured the synthetic fuel industry to attract the necessary capital? What should be the use of the coal which is now being unit-train shipped to midwestern electric utilities? Who decides what fraction of the coal goes to boilers in steam-electric plants and what goes to making gasoline or aircraft fuels? These are critical questions for the nation's energy future.

But here's an even more fundamental question: Just what is an "allowable" annual growth rate in energy consumption? Our present growth rate of nearly 5% a year simply cannot be sustained. On the other hand, a "zero growth" policy, advocated by some environmentalists, would have an economy-wrecking potential.

Rather arbitrarily, I have calculated that each barrel of oil (or its energy equivalent) is linked to about $100 of Gross National Product. If so, a cutback of 1 billion barrels in annual oil consumption would mean a $100 billion dent in the GNP. Of course, this is a grossly simplified calculation, but it does indicate the scope and painfulness of the economic decisions we are going to have to make.

Detroit's monomania for the super-horsepower engine, coupled with the fuel robbery perpetrated by lowered compression ratios and air pollution controls, has contributed mightily to our fuel crisis. Yet with so much of the nation's well-being linked to the motor car, we can hardly afford to dislocate our economy by precipitous, ill-considered responses. Nor can we let environmental considerations alone [illegible] historians a[illegible] transportation, the location of power plants and the development of energy resources. I believe the much-publicized Environmental Impact Statement must be replaced by a "Triple E" statement that strikes a balance between environmental, economic and energy considerations.

Shift to Lighter Cars

It seems obvious, however, that for the nation to live within its energy means, Detroit must at least shift to lighter, higher-performance cars. I see no reason why Detroit cannot continue to increase unit sales, adding 25 million more vehicles to the car population by 1980—provided the gasoline mileage goes up to an average of 18 miles per gallon. This would allow full mobility for Americans—that is, 10,000 miles per vehicle-year—while consuming no more fuel than automobiles did in 1973. It would, however, mean flushing the low-performance cars out of circulation.

Similarly, it is obvious that the air cargo business cannot rocket ahead on the vertiginous growth rate of past decades. Shipping cargo by air is energy lunacy, much more wasteful of fuel than transporting things by rail, measured on a ton-mile basis. Trucks, too, are less efficient than trains. Inevitably, we must return to the rails, and this will require a national metamorphosis that will occupy the remaining decades of this century.

The fact that the United States is running out of pumpable fuels places high priority on central station generation of power, using either solid fossil fuels or uranium. Next year about 30% of all U.S. fuel consumption will be directed to electric energy generation and this is expected to grow to 50% by the end of the century. By then, up to 60% of all electric generation is projected to come from nuclear power sources—from 1,000 nuclear stations. By the year 2000, uranium should be substituting for the annual burn-up of more than 2 billion tons of coal.

Atomic power raises environmental and safety issues which must be faced. But for anyone concerned about the ravages of strip-mining, it also offers immense advantages over coal and oil shale. In fact, once the power-breeder reactor comes on line, it will be possible to coast through the entire 21st Century without mining a single ton of uranium ore; industry will merely rework ore already mined and tap the full potential of the atom.

As we move toward massive reliance upon coal and atomic energy, we also will move toward an all-electric economy. Unlike oil and gasoline, which can be distributed easily for utilization in automobile engines and other small power plants, coal and atomic energy lend themselves best to exploitation in central power plants. If advances in electric batteries or other methods of storing energy make the electric car a reality, each garage, in effect, will become a private filling station, with the car charged up there overnight for use the next day.

The U.S. energy economy is so often projected only as far as the year 2000 that people overlook the energy requirements of the next century. Whereas this century historians a[illegible]

90% fossil and 10% nuclear, the relationship will become increasingly nuclear in the future. Although it's unlikely that 21st Century Americans will be free to waste energy the way we have, many experts think that the U.S. population will grow very slowly in the next century and not exceed 400 million by the year 2100. Thus, I would expect that total energy consumption would no more than triple in the next century and that nuclear sources could maintain a viable U.S. energy economy through the 21st Century.

A Bleak Picture

The world-wide energy picture, on the other hand, is very bleak. The "easy energy" sources of other nations should run out rather soon in the 21st Century. The proved reserve of 500 billion barrels of oil in the Persian Gulf may seem immense, but it cannot satisfy the rising energy expectations of developing countries for very long. The run-out of "easy energy" and the on-set of "tough energy" could have revolutionary consequences for the growth of the planet's population. Merely feeding the growing populations of underdeveloped nations may eventually impose energy requirements that many nations will not be able to meet. Nor will many of these nations be able to afford the U.S. solution: a highly-electric economy designed to mate with nuclear power. Result—a widening of the gap between the have and the have-not nations.

I have found that in lecturing about the subject of future energy supply people discount rather gloomy forecasts as these by saying that "scientists will come up with a solution!" There are, of course, a number of energy options already in sight, but all have their drawbacks. None qualify as "easy energy," especially if all costs are reckoned, and it is this advent of "tough energy" that has such fundamental significance to our future way of life.

Physicist Ralph Lapp, a member of the World War II Manhattan Project, is now a Washington-based energy consultant.

WASHINGTON POST
23 May 1974

Hobart Rowen

The Oil Cartel and Development Aid

Despite the noble efforts of IMF Managing Director H. Johannes Witteveen, the oil cartel countries have been willing to cough up only small amounts of money to help the oil-importing countries meet the outrageous prices that the cartel itself has set.

The defense offered by the Organization of Petroleum Exporting Countries (OPEC) is a mixture of clever rhetoric and sheer arrogance. In essence, they argue that the cartel countries have not become truly rich, like the industrialized West, but merely more "liquid"; that oil prices are still below the level that should be achieved to balance off inflation in other commodities; and that the West —notably the United States and Canada—are soaking the poor countries by extortionate prices for food.

Dr. Abderrahman Khene, the Secretary-General of OPEC, made the rounds here recently, delivering this pitch. He argues that the industrial nations have been raising the prices of their manufactured goods and food, and that the problem of the poor countries thus didn't start with OPEC.

Agriculture policy in this country, of course, has stupidly contributed to inflation. But as Dr. Khene knows, the price of wheat bears a close relationship to weather and crop yields—a matter quite different from a half-dozen oil sheikhs sitting down in Teheran, arbitrarily deciding on a price for oil that costs 10 to 30 cents a barrel to produce—a cost that hasn't varied.

If the United States decided to price wheat the way OPEC prices oil, it has enough leverage on the market to get $20 a bushel.

But there is little doubt that the major countries of the world, especially the United States, must be faulted for lack of generosity in development aid. Far from meeting the recommended goal of 1 per cent of total Gross National Product, U.S. development aid is about one-fourth of that figure, ranking 15th in a list of 16 wealthy countries.

That does not excuse the OPEC countries for the special and sudden burden they have placed on the rest of the world, notably on the poor countries, by a four-fold increase in the price of oil within a year's time.

When Dr. Khene talks of OPEC's "moderation" and "wisdom" in "limiting" the price of oil to provide a government-take of $7 a barrel, he is talking economic nonsense. The abrupt shift of $50 to $60 billion of resources from the oil-consuming countries to OPEC (even if some of the burden is postponed by financing schemes) is beginning to raise havoc in industrial as well as less developed nations.

"In thinking about the effects of the sharply higher oil price," Federal Reserve adviser Robert Solomon said in a thoughtful speech the other day, "I have found it useful to view it as a sales tax on consumption. The imposition of this 'tax' has raised the price of petroleum products."

Solomon, vice chairman of the Committee of Twenty Deputies, points out that the OPEC countries "must lend their enlarged revenues" back to those who are paying through the nose for their oil.

But not much is coming back. Against the $59 billion increase in OPEC surpluses this year alone projected by Witteveen (to a total of $65 billion), the total amount pledged for a special IMF "facility" is some $2.8 billion.

Much has been made of some sales of oil at concessional terms to India. But the concessions don't seem overly generous—and in total, are a drop in the bucket. For example, India will get about $100 million worth of oil from Iraq and a similar amount from Iran in special deals. Against that, India's extra cost for oil this year is more than $1 billion.

The need to get cash into the hands of the hardest-hit countries is so desperate that the World Bank is scraping together about $150 million by diverting some of the International Development Agency (IDA) funds—pitifully small to begin with—to the poorest countries on the list.

International agencies calculate that higher oil, food, fertilizer, and capital goods costs to the poor nations this year will run about $6 billion more than what they will recover in higher export prices.

Assistance by the IMF and other international agencies, plus a reduction of reserves will cover $4 billion, leaving a minimum of $2 billion in new assistance needed by the poor countries. Projections are that this minimum "gap" will increase to $2.5 billion in 1975, and run to $4 or $5 billion a year from 1976 to 1980.

In the immediate and desperate period ahead, the United Nations is trying to get contributions—in any form — that would work out to roughly a 50-50 share between the industrilized world and OPEC.

But the industrialized world, even if it comes through with contributions this year equal to OPEC's, is likely to resist carrying an equal share into the future.

The strong view of the United States, as it sees new OPECs over the horizon for bauxite and other commodities, is that the biggest part of the burden ought to fall on those who create the problem.

The Outlook

Review of Current Trends In Business and Finance

KUWAIT

Passengers on Kuwait Airways jets aren't regaled with liquor any more, but the Arab line is very big on recorded music. Several times during one recent flight, a familiar theme was played—the "Fiddler on the Roof" tune in which the peasant hero plaintively asks God if it would spoil some vast eternal plan if he were a wealthy man.

The question could scarcely be more appropriate, now that Kuwait and a handful of other oil states are suddenly becoming the wealthy men of the world of nations.

By roughly quadrupling the price, they've made clear for months now that they possess a great deal of previously-unused monopolistic market power over their scarce natural resource. What remains to be demonstrated as clearly is what difference their abundant new resource of money will make in the world's financial and political life.

While it isn't as obvious as watching one's wallet flatten faster at the gasoline pumps, the higher prices could prove a peculiar answer to one prayer of economists: that there be more savings so that the world's massive investment need can be met in a non-inflationary manner. Most of us might have managed to spend the extra gasoline money on other consumer goods. But the oil producer states are much like one small, super-rich family, which simply can't spend all its income.

Having a forced savings plan imposed by foreigners isn't pleasant for individuals, of course. But the bulk of the money must at least flow back into Western industrial countries as a group, because the West is where the dividends and interest can be earned. Already, some European analysts say, this extra capital is holding down interest rates in the London-centered Eurodollar market, thus making it easier for U.S. rates to recede.

Another side-effect of the Arabs' new command over capital movements is the unexpectedly early dismantling of Western nations' barriers to free flows of money. The U.S. ended its capital outflow controls partly to ease fears of Arabs and other foreigners that they might have trouble repatriating money they invest in the U.S., and Germany could lower its anti-inflow hurdles because the drain of cash for oil imports is apt to offset any inflationary inflows of foreign funds.

Less benignly, the spectacle of the Arabs rapidly becoming rich is making Western nations feel poor, at least too poor to be patient about donating foreign aid. Whether the Arabs will step manfully into this gap, even to the extent of offsetting the extra burden on oil-importing poor countries, is one of the most pressing questions posed by their suddenly changed condition.

They stand to be increasingly able to afford foreign aid, but they're not sure that there's much in it for them. Their poor black African neighbors to the south are the most logical recipients, but politically fickle. As the Arabs are well aware, Israel devoted much foreign aid effort to Africa for years, without preventing a rapid parade of break-offs of diplomatic relations when the October war broke out.

The foreign aid question would be easier to answer if it were purely a humanitarian matter. Or if the Arabs possessed the usual attributes of aid-donating powers, such as the mighty industries, manpower and political cohesiveness of the U.S. or the Soviet Union. Under those conditions, foreign aid can be one more tool of market penetration and political persuasion.

The same considerations apply to the vaster sums which the Arabs will be under internal pressure to profitably invest abroad. Until now, one could be pretty sure that a creditor country would also be a strong and mature military-industrial power, as the U.S. or Britain before it. The borrowers have been the smaller, weaker lands.

Fairly or not, the age-old axiom of might making right injected a useful measure of orderliness and predictability into international debtor-creditor relationships. The reversal of customary financial roles, though, ushers in a new and potentially unsettling era, to which all parties may have some difficulty adjusting.

It is well established in the International Monetary Fund, for instance, that the player with the most chips also has the most clout, while countries compelled to plug deficits by borrowing must conform policies to creditors' wishes. Should the Arabs someday insist on a high official gold price or an end to floating exchange rates, they'd have the financial wherewithal to mischievously remind the West of the reversed roles.

But the adage about money not being everything would seem to apply here, too. "Is J. Paul Getty the most powerful man in the world?" rhetorically asks a Western diplomat. The fear among Arabs that overly-ambitious embargoes could provoke a swoop by Western paratroopers seems an earnest one. But the oil under their own soil is a very secure asset indeed in contrast to their billions of dollars in foreign banks.

Especially as their petroleum phases out, the Arabs will become vitally dependent on the goodwill of industrial powers in treating their financial assets as sacrosanct. To rely on foreign investment being safe for 50 or 100 years in the future, sighs a senior European diplomat, is to "assume a standard of international behavior unknown in history." Should they seek to throw their financial weight around too aggressively, he adds ominously, swiftly-enriched small countries such as Kuwait "could be the world's first civilizations to go from mud village back to mud village in less than a century."

Whether the Arab riches will spoil some vast eternal plan depends on one's own perspective. But the new situation suggests that if there is any such plan, it consists both of immutable principles and scrappable chapters.

—RICHARD F. JANNSEN

Wall Street Journal
11 March 1974

NEW YORK TIMES
20 April 1974

Mideast Policy And Oil

By C. L. Sulzberger

CAIRO—If the resulting energy crisis accomplished nothing else, it did provoke thorough and up-to-date studies of the role of fuel in a complex modern world and the implications of oil to the economics, commerce and diplomacy of both petroleum producers and industrial consumers.

The most recent study, completed after a late March meeting of Japanese, North American (U.S.A. and Canada) and European experts, has produced conclusions that are on the whole heartening although predicated on certain contingencies.

The assumption of this report, inspired by the Brookings Institution, is that neither true peace nor another major conflict will break out in the Middle East and that no important technological breakthrough, altering the energy picture, can be envisioned between now and 1985.

The fundamental conclusion is that unilateral actions will not solve the problems posed, which must be faced on a multilateral basis. It is argued, "Uncoordinated national efforts to deal with the economic impact of higher oil prices would be ineffective or worse."

In order to improve their basic bargaining position, it is suggested that industrialized nations should consider establishing a data bank in which all oil transactions would be recorded. It is also proposed they should agree that all bilateral deals would be subject to scrutiny and possible criticism by the Organization for Economic Cooperation and Development (OECD).

Beyond these specific recommendations, the experts conclude the world isn't faced by an imminent energy shortage and, if nations act wisely, can avoid continuously rising prices. Industrial lands are cautioned to avoid confrontation with oil exporting countries.

Both importers and exporters are urged to help developing nations meet the problems posed to their economies by zooming prices. The theme is international cooperation in all aspects because efforts to go-it-alone could prove "ineffective and self-defeating."

The study divides petroleum exporting nations among three groups. Six tend to maximize production. Two (Kuwait and Libya) try to conserve their oil reserves by rationing. "Residual suppliers," headed by Saudi Arabia, easily the largest producer, comprise the third group. In terms of fundamental policy, this indicates as much of a division among producers as there is among consumers: for example, between the U.S.A., France, the Netherlands and Japan.

The same distinction helps understand Middle East differences with regard to formulating a common policy—both among oil suppliers and among those with little petroleum, like Egypt. Iran (easily the largest supplier among the "maximizers"), Saudi Arabia (the super-producer) and Egypt (not a petroleum exporter) have parallel policies that tend to sympathize with United States approaches to both Middle East problems and to energy. Iraq is pro-Soviet. Libya and Algeria are anti-monarchic.

Another distinction that must continually be recalled is that West Europe and Japan depend largely on Middle Eastern oil whereas North America is on the verge of self-sufficiency. This stimulates a divided consumers' approach because, the report says:

"Europe and Japan, being more dependent than the United States on Arab oil and less sensitive to the desires of Israel, have naturally had a different perspective from that of the United States with its emphasis on balancing Soviet power and on promoting Arab-Israeli settlement."

Both oil-exporters and oil-importers are split by contrasting ideologies and differing economic requirements. Egypt can sway some exporters although it doesn't itself speak as a member of the club. And the Sadat Government in Cairo has swung toward a pro-U.S. stance that brings it closer to such conservative monarchies as Saudi Arabia and Iran with respect to Soviet-American rivalry.

The study can profitably be read by Middle Eastern governments because it hints at changes in oil-producer and oil-consumer relationships, conditioned ultimately by internal and external ambitions of nations in each bracket. It is also evident to petroleum exporters that imminent French elections may have an effect on the oil equation.

Any French Government formed in May will probably prove less inclined to pursue a go-it-alone petroleum policy than the Pompidou regime. Therefore the consumers may feel encouraged to move more speedily than in the past toward the kind of multilateral approach to energy favored by the tricontinental conference, just as the producers find their own differences in approach, already discernible, are becoming more evident.

What must be avoided by both sides, as this shift develops, is any temptation to a confrontation in which either exporters or importers seek to press a tactical bargaining advantage.

NEW YORK TIMES
23 April 1974

Iranian Official, at U.N., Doubts Oil Price Will Continue Big Rise

By KATHLEEN TELTSCH
Special to The New York Times

UNITED NATIONS, N. Y., April 22—Iran's Finance Minister said today that he did not foresee vast increases in oil prices, but he cautioned that there would be some increases unless the industrialized countries controlled "galloping inflation."

The Iranian, Jamshid Amouzegar, who has been serving as chairman of the Organization of Petroleum Exporting Countries, said at a news conference that he hoped the United Nations General Assembly's session on raw materials and development would set up a special fund to help countries most affected by the rise in oil prices. He conceded, however, that there had been little progress so far. The three-week session went into its final week today.

Dr. Amouzegar denied that Iran had unilaterally raised the price of oil. He emphasized that the decision had been made unanimously by the 12 members of the Organization of Petroleum Exporting Countries.

The price of oil has now reached a level comparable to that of other energy sources and should keep pace with such alternatives as coal, oil shale, tar sands and nuclear power, he declared.

Pushing the price too high would put pressure on countries to rush ahead with nuclear developments without regard for adequate health and environmental safeguards, he said.

In the Assembly where ministers continued their policy statements before dwindling audiences, Foreign Minister Rudolf Kirchschläger of Austria declared that an extensive scientific effort would have to be made to develop alternative energy sources and urged this be undertaken by the International Atomic Energy Agency, based in Vienna.

Another speaker, Foreign Minister Njoroge Mungai of Kenya, urged the oil-producing countries to use their new affluence to become "pioneers" in setting up a world fund to increase food production, particularly in the drought-stricken countries of West Africa.

Australia hailed the establishment last month of an organization of some major producers of bauxite, the raw material from which aluminum is extracted, and said this new grouping should work toward securing fair returns for the producers and just prices from the consumers.

NEW YORK TIMES
13 May 1974

No U.S. or World Oil Shortage Seen This Year

Lower Consumption and Higher Prices Apparently Bring About Surplus

By WILLIAM D. SMITH

Barring any unexpected events, there should be no shortage of major petroleum products either in the United States or the world during the rest of the year, according to industry and other sources.

This optimistic forecast could be threatened if the Arabs reimposed their oil embargo, by more production cutbacks or a return to old usage patterns that would eliminate major savings resulting from conservation practices.

Indeed, the slowdown in consumption around the world caused by conservation measures and sharply higher prices for gasoline, heating oil and other products seems to have swung a tight worldwide oil-supply situation to a surplus.

Demand Is Off

Lawrence Goldstein, senior economist for the Petroleum Industry Research Foundation, said: "Although consumption figures for the year to date are not yet exact there would appear to be a definite slight surplus at the moment in crude oil world-wide. Demand is off anywhere between 5 to 8 per cent in the first quarter, while production is creeping up at a faster pace then expected."

A spot check of the major oil companies indicated that they had similar indications.

The Federal Energy Administration's latest forecast had actual demand in the United States at 16.1 million barrels a day, compared with a demand rate for the period anticipated before the Arab embargo of 17.9 million barrels a day, and an actual average demand of 17.2 million barrels a day for 1973.

Similar declines have been recorded, although based on preliminary figures, in most countries of the world.

Demand for gasoline, heating oil and residual oil in West Germany was off 6 per cent, France 11 per cent and Britain 12 per cent, according to one company's estimates.

Consumption in Japan rose 4 per cent in the first quarter of this year, but in recent years the increase in consumption had been 15 to 20 per cent a year.

A warmer than normal winter in the United States and Europe contributed considerably to the decline in usage, but conservation measures as well as sharp price increases probably played a more important role.

John Lichtblau, who heads the Petroleum Industry Foundation, predicted that the United States should have no problems with any shortages of oil products this year. He said that oil imports would average about 3.3 milion barrels of crude during the second quarter of 1974 and exceed four million during the third quarter, alowing the nation's refineries to operate at around 91 per cent of capacity. This should provide enough gasoline even during the peak driving period to meet even a slight increase in demand he said.

Evidence that world oil shipments were returning to normal figures came at the end of last week from the Federal Energy Administration, which reported that imports of crude oil for the week ended May 3 were at a rate of 3.99 million barrels a day, the highest level so far this year.

The agency said that the total was 974,000 barrels a day above the preceding week and was the largest weekly gain this year. Most of the increase was caused by a higher level of imports from Arab countries. Shipments from the Arab countries 651,000 barrels a day in the latest week compared with 137,000 barrels a day in the preceding week.

Total imports including petroleum products averaged 6.5 million barrels a day, the first time the total has exceeded six million barrels this year.

In addition, the American Petroleum Institute's figures for the four weeks ending May 3 showed that for the first time this year imports of crude oil and products exceeded 1973 totals.

Production figures tell several interesting stories.

In the United States production of crude oil and condensate totaled nine million barrels a day in the latest week, compared with 9.37 million barrels a day in the week a year earlier. This represents a continuing trend brought on by a decline in productivity of the nation's major producing wells. There is some hope that the higher prices for oil now being paid in the United States will result in a small reversal of this trend or at least prevent further erosion.

Iran Pace at Record

Overseas, some of the Middle Eastern producers, but not all, have increased output. The major factor, Saudi Arabia, with the world's largest oil reserves, has raised her output to 8.5 million barrels a day from a embargo low of 6.5 million and a pre-embargo September rate of 8.29 million barrels a day. Iraq is producing at a near peak of 2.1 million barrels a day, and Abu Dhab is close to 1.5 million barrels a day—both ahead of levels before the embargo against the U.S.

Kuwait and Libya, on the other hand, are producing at considerably less than their pre-embargo pace. Both have given conservation a reason, but both countries, which are sparsely populated, have more revenues than they know what to do with at the moment.

Iran, a non-Arab country in the middle East, is producing at a record 6.2 million barrels a day, while Nigeria, Africa's leading producer, has pushed production to near 2.3 million barrels a day, also a record.

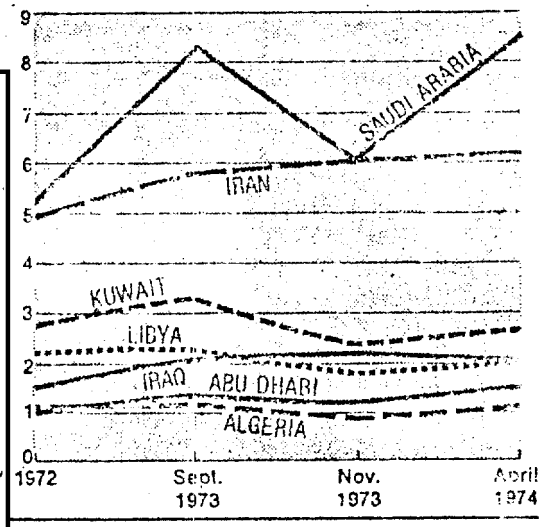
Indonesia has raised production to 1.46 million barrels a day, but Venezuela, reduced production output in April by 5 per cent to conserve natural gas, according to the Government.

Nonetheless, on balance, supply appears to be slightly ahead of reduced demand.

Does this mean a lowering of record prices for gasoline and heating oil, which would normally take place in a free-market environment? Highly unlikely, according to most industry analysts. They say that the strength of the Organization of Petroleum Exporting Countries would prevent any major price decline in crude oil, thus putting a floor under product prices.

Oil Production By Leading Countries
(Millions of barrels a day)

Middle East and North Africa



Others

	1972	Sept. 1973	Nov. 1973	April 1974
VENEZUELA	3.2	3.4	3.36	3.1
NIGERIA	1.8	2.1	2.2	2.3
INDONESIA	1.0	1.35	1.39	1.46

The New York Times/May 13, 1974

NEW YORK TIMES
27 February 1974

An Optimist on Energy

Yale Professor Projects Long-Term Growth for Economy With New Fuels

By LEONARD SILK

To paraphrase the folk singer, "Where has all the gasoline gone?" The Shah of Iran says the United States is getting as much oil as it did before the embargo, but President Nixon and William E. Simon, the energy administrator, say they know how much oil we are not getting. Public confusion over the energy crunch persists despite the President's assurance that, "while the crisis has been passed, the problem remains."

Economic Analysis

How long will it last? Until summer, as Mr. Nixon suggests? For a few years, as Mr. Simon has warned? Of for the next century, as such pessimistic scholars as Prof. Jay W. Forrester and Donnella H. Meadows of M.I.T. believe?

Some time before the end of the 21st century, the pessimists have predicted, this petroleum-based economy will collapse unless growth is stopped and lifestyles drastically changed.

However, on the basis of a new econometric study of the energy problem, Prof. William D. Nordhaus, an economist at Yale University, is much more optimistic about the long-term outlook for the supply and demand of energy.

Professor Nordhaus, who has set forth his findings in "The Allocation of Energy Resources," published in the current issue of Brookings Papers on Economic Activity, gets the United States through at least the next two centuries without any significant slowing of the long-term growth rate due to a shortage of energy. Beyond that, he is counting on breeder nuclear reactors and other new energy technologies to carry the economy into the indefinite future.

His basic model shows how society will leapfrog from technology to technology in the decades ahead, as lower-cost energy sources are exhausted and give way to higher-cost sources.

A jump occurs whenever the cost curve of an old technology "kisses" the cost curve of a new technology.

Based on the assumption of "efficient markets" for allocating energy resources—that is, competitive markets with free-flowing international trade—econometric the Nardhaus model predicts that the United States will continue to rely heavily on domestically produced petroleum anatural gas for the rest of the nineteen-seventies.

These domestic sources are already drilled, extraction costs are cheap and transport costs are low. But domestic petroleum resources will be virtually exhausted by 1980, according to the Nordhaus model.

In the following two decades, from 1980 to 2000, the United States is expected to rely almost entirely on imported petroleum and imported natural gas. However, this energy deficit will put a heavy drain on the United States balance of payments, amounting to $20-billion annually.

It will also involve heavy dependence on foreign countries that could be politically unerliable and that could exploit a monopoly selling position—as the international oil cartel is currently doing.

After the year 2000, the Nordhaus study finds, the American position may improve sharply. Imported petroleum and gas will lose markets to coal and shale, augmented by light-water nuclear reactors.

The world energy market, through the first part of the 21st century, will be increasingly dominated by United States coal and shale oil reserves.

As the 21st century wears on, the breeder reactor will gradually take over—possibly augmented by other new energy technologies such as solar, geothermal, gravitational or unimaginable.

May Uncertainties

Shale oil and liquefied coal will still be used for transportation through 2120, but thereafter all the fossil fuels will have been exhausted.

The economy will then have to run on an electric hydrogen technology or some other exotic technology with a resource base that is virtually infinite—if high industrial civilizations are to survive. On this point, Professor Nordhaus is hopeful, but he recognizes that his hope lacks a firm scientific foundation.

The Nordhaus hodel cannot handle many uncertainties such as the real amount of recoverable fossil fuel reserves, the cost and arrival dates of future energy technologies, political maneuvers or wars, eegree of freedom or monopoly in the domestic and world market and environmental policies.

Yet the econometric model has some fascinating stories to tell, on the basis of its estimates tf predicted prices, production costs and market-determined royalties on existing depletable resources.

One such story is the delay of substantial nuclear generation of electricity until after the year 2000, whuge Government subsidies are responsible for the present limited use of nuclear generators.

Even with heavy Federal subsidies, nuclear fuel accounted for less than 1 per cent of total United States energy consumption in 1968.

Rapidly rising prices of nuclear generating equipment will slow the introduction of nuclear technology. And serious problems of nuclear waste disposal remain to be solved if the switchover to nuclear is to come as soon as the Nordhaus model projects.

The single most striking result of the Nordhaus analysis is the huge difference between the actual and "optimal" prices of petroleum. It finds that, even before the Arab-Israeli war of October, 1973, and the subsequent run-up in oil prices, actual petroleum prices in the United States were far above Professor Nordhaus's estimate o what long-run competitive supply prices of petroleum would have been.

In 1970, he finds, the price of crude oil in this country was $3.23 a barrel against his calculated efficiency price of $1.20—a markup of 169 per cent over cost. Economists who have studied the Nordhaus data believe that the gap is due mainly to oil-import quotas (set to prevent foreign price competition) and monopoly pricing as administered by the Texas Railroad Commission and the small number of international oil companies and producing countries.

Since the October war, the actual price of crude oil has soared much higher above the long-run supply price. To some economists this suggests that a major break in oil prices lies ahead.

Professor Nordhaus figures that the optimal monopoly profits, the present monopoly price in excess of $11 a barrel is far too high. He calculates that the optional monopol price for the long run would have been $4 a barrel in 1970—a price that would gradually climb with inflation. (The competitive optimal price would have been only $1.20 in 1970.)

What policy conclusions emerge from the Nordhaus study?

One is that, as long-run policy, it makes no sense to jack up the prices of energy products for the purpose of artifically preserving energy resources. At existing yields on investment, averaging about 10 per cent, it would be wiser to put cheap resources to work now and use the real resources thereby saved to develop synthetic fuels for future use.

Professor Nordhaus's finding that current prices of crude oil and gasoline are far above their long-run competitive supply prices implies that a policy aimed at further increases in the long-run price of oil and gasoline would go in the wrong direction.

Isolation's High Cost

His study appears to contradict the wisdom of national self-sufficiency in energy (President Nixon's "Project Independence"). If free trade in energy is ruled out—because of political risks—the alternative of national self-sufficiency will be very costly, amounting to an average of $16-billion a year over the next 20 years, for a staggering total of $3.2-billion.

It would be a lot cheaper to engage in international trade and use a big slice of the savings (even as much as half of them, or $8-billion a year) to finance an oil storage program to cover, say, four years' oil imports while holding some United States oil and gas resources on stand-by reserve, as recommended by the Shultz report on oil-import controls of 1969 — which the Nixon Administration rejected.

The main thrust of the Nordhaus study is that "we should not be haunted by the specter of the affluent society grinding to a halt for lack of energy resources."

In these gloomy days, every bit of cheer is gratefully received—at least until the opposition knocks it down.

The Annual Report
of the
Council on International Economic Policy
February 1974

II. SELECTED CURRENT INTERNATIONAL ECONOMIC ISSUES

Chapter 1 — SOME IMPLICATIONS OF THE ENERGY CRISIS FOR THE UNITED STATES AND THE WORLD ECONOMY

Ensuring Adequate Energy Supplies

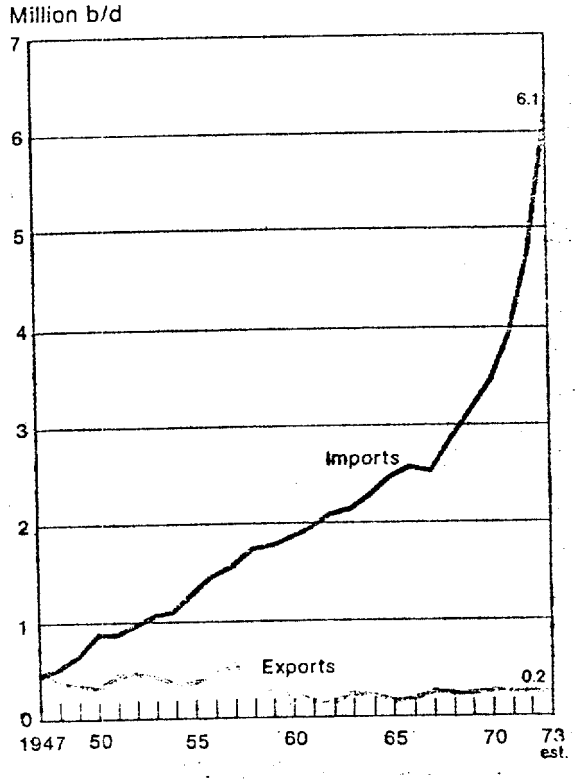
Until recently, the United States met virtually all of its energy needs from domestic sources. This self-sufficiency gradually eroded during the postwar period as foreign sources offered petroleum at prices below domestic prices and our domestic energy production failed to keep pace with our rising energy consumption. As a result, in 1973 we imported more than 15% of our energy requirements. The Arab oil embargo exploited this vulnerability. So that the United States does not become dependent upon foreign sources for our crucial energy needs in the future, the President has declared our national commitment to achieve the capacity for self-sufficiency in energy by 1980—"Project Independence".

A confluence of events has led to our increasing reliance on imported petroleum. US demand for all forms of energy has been accelerating since 1960, reaching nearly a 5% annual growth rate during 1967-73. At the same time, our domestic production of crude oil, gas, and coal has leveled off or begun to decline. As a consequence, our *new* energy needs of recent years have been met through imports—primarily of petroleum. During the 1960s our oil imports increased only 6% a year, but since 1970 they have risen 18% annually. (See Figure 36.) Our domestic oil production in 1963 covered most of our consumption, while in 1973 it met only 65% of our needs.

Our growing reliance on imported energy also extends to natural gas. Domestic gas consumption, because of its low regulated price, has risen sharply to the point where gas now satisfies about one-third of America's total energy needs. At the same time, the low controlled price reduced incentives for exploration, with the result that discoveries of new reserves have not kept pace with production. Unless domestic exploration and production can

Figure 36

US Foreign Trade in Petroleum



once again be increased, the United States may have to rely upon larger and larger quantities of imported natural gas in liquefied form. In order to avoid increasing dependence upon imported liquefied natural gas, action on the Administration's proposal to deregulate the price of new natural gas at the wellhead is vitally important. This measure will stimulate the needed increase in domestic production of natural gas and, over the long run, bring demand into balance with supply.

The emergence of the United States as a major energy importer comes at a time when other industrialized areas, especially Western Europe and Japan, are also seeking increasingly large volumes of imported energy to fuel their own expanding economies. (See Figures 37 and 38.) With the advent of the United States as a major competitor for these resources, demand for the world's known petroleum reserves has grown substantially, with brisk competition among the industrialized nations.

In 1973 oil producers took advantage of tight supply and heavy competition for resources through two major actions. First, in a move directly related to the Arab-Israeli war, the Arab oil nations embargoed oil to the United States and the Netherlands, and reduced supply to other customers, highlighting the significance of the Arab countries in the world supply picture. Second, the Organization of Petroleum Exporting Countries (OPEC) took advantage of their monopoly position and crude oil prices nearly quadrupled during the past year.

Unless cooperative actions can be taken to moderate the price increases and to adjust to the dislocations caused by them, both oil consumer and producer nations may find themselves in a worsening economic position. As a first step in achieving a cooperative approach internationally, the President has invited a number of major industrialized nations to a conference in Washington to discuss the problems of ensuring adequate energy supplies at reasonable cost.

Short-term Constraints on Expanding Oil Supply

There is little that major industrial nations can do immediately to reduce their dependence on imported oil. In the United States, domestic non-oil energy sources such as coal, nuclear power, and natural gas will in time significantly increase their current level of production. Alaskan production and new discoveries in off-shore areas will not increase domestic crude oil production substantially in the next year or two, but output is increasing in traditional production areas, particularly from stripper wells.

While imports supply about one-third of our oil needs, Western Europe and Japan rely on imports for virtually 100% of their supply. (See Figure 39.) Even the North Sea production which will be coming onstream in the next few years may amount to no more than 15%-20% of Europe's oil needs by 1980, and Japan has no comparable domestic sources.

At present, the Middle East has proved oil reserves capable of meeting the growing import needs

Figure 37

Energy Sources, 1972

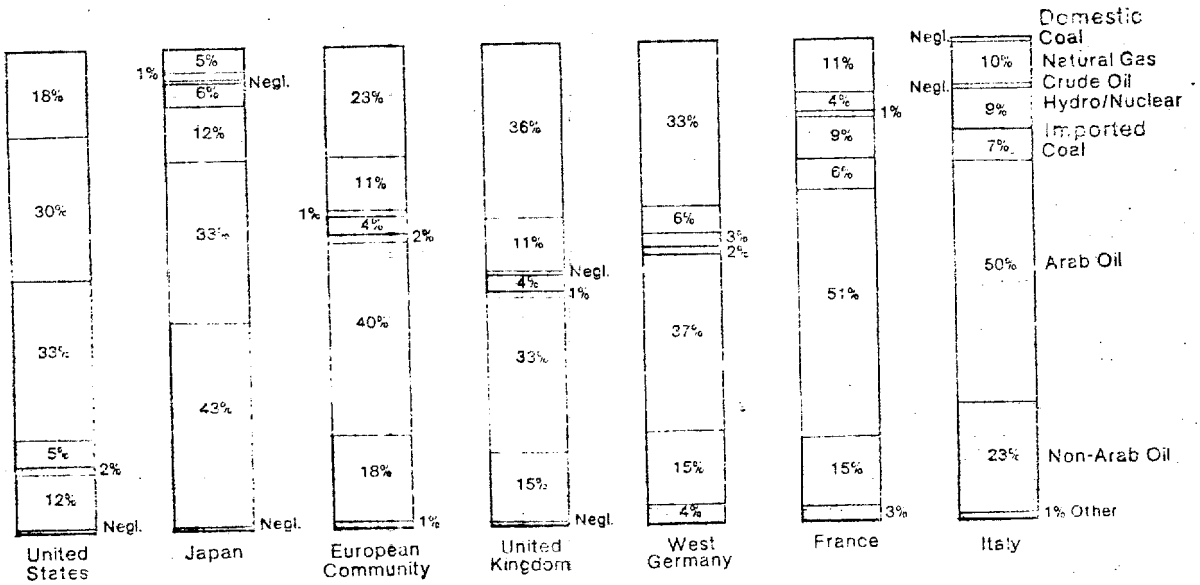
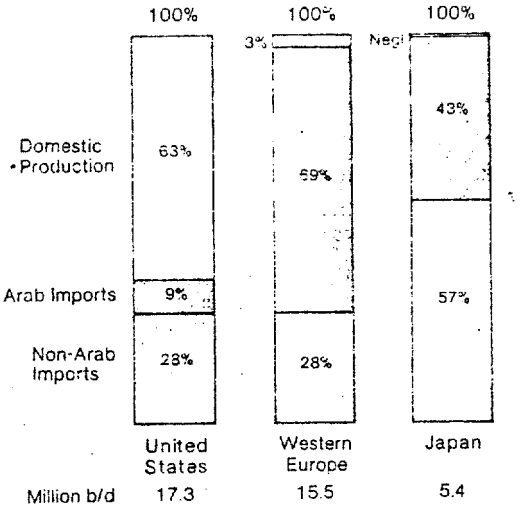


Figure 39

Petroleum Sources

1973 (Jan-Sep)



of the United States, Europe, and Japan. As shown in Figure 40, they have 62% of the world's proved supply, as contrasted to less than 11% in the United States (including Alaska), Western Europe, and Canada. The Middle Eastern countries, however, may not expand production sufficiently to meet the short-run needs of the importing nations. Kuwait, over a year before the October 1973 Middle East war, had decided to limit production to 3 million barrels per day. Some Arab states argued that their oil assets were increasing in value more rapidly in the ground than they would as currency in the bank. Another factor which may prevent Middle East production from increasing to meet the world's oil needs is the use of oil as a political tool.

US Steps To Increase and Diversify Domestic Energy Sources

There is no reason why the United States cannot become independent in energy. As President Nixon has declared, the technical and financial effort required will be comparable to that expended on the Apollo program which put a man on the moon. Nevertheless, it is already clear what steps will be necessary.

1. Construction in the next several years of the long-delayed Alaska pipeline, which offers the means of tapping our large Alaskan reserves and compensating for production declines.

2. Decontrol of prices on new supplies of natural gas, to encourage the exploration which by 1980 should result in greatly expanded domestic production.

3. A program to accelerate leasing of lands on the outer continental shelf for exploration and development of oil and gas reserves.

4. A crash program of research and development in economical techniques of coal gasification and liquefaction, and development of shale oil designed to make the vast reserves of these energy resources available as fast as possible.

5. The passage of a national powerplant siting bill to provide simplified procedures for the siting and approving of electric energy facilities. The speeding up of the licensing and construction of nuclear powerplants in order to reduce the time required to bring them on-line from ten to six years.

6. An expedited program of research and development to speed the realization of the fast breeder reactor and other nuclear plants.

7. Stepped-up Federal energy research and development programs for non-depletable power sources (for the 1990s) such as geothermal, solar, and fusion.

8. A massive conservation effort designed to reduce in the short term unnecessary consumption of energy for electrical utilities, transportation, home heating, industrial and commercial usage, etc.

Expanding and Diversifying Our Foreign Energy Sources

Although it will remain the goal of the United States to achieve the capability for national self-sufficiency in energy by 1980, self-sufficiency does not mean autarky or isolation. As President Nixon stated to the Seafarer's International Union on 26 November 1973:

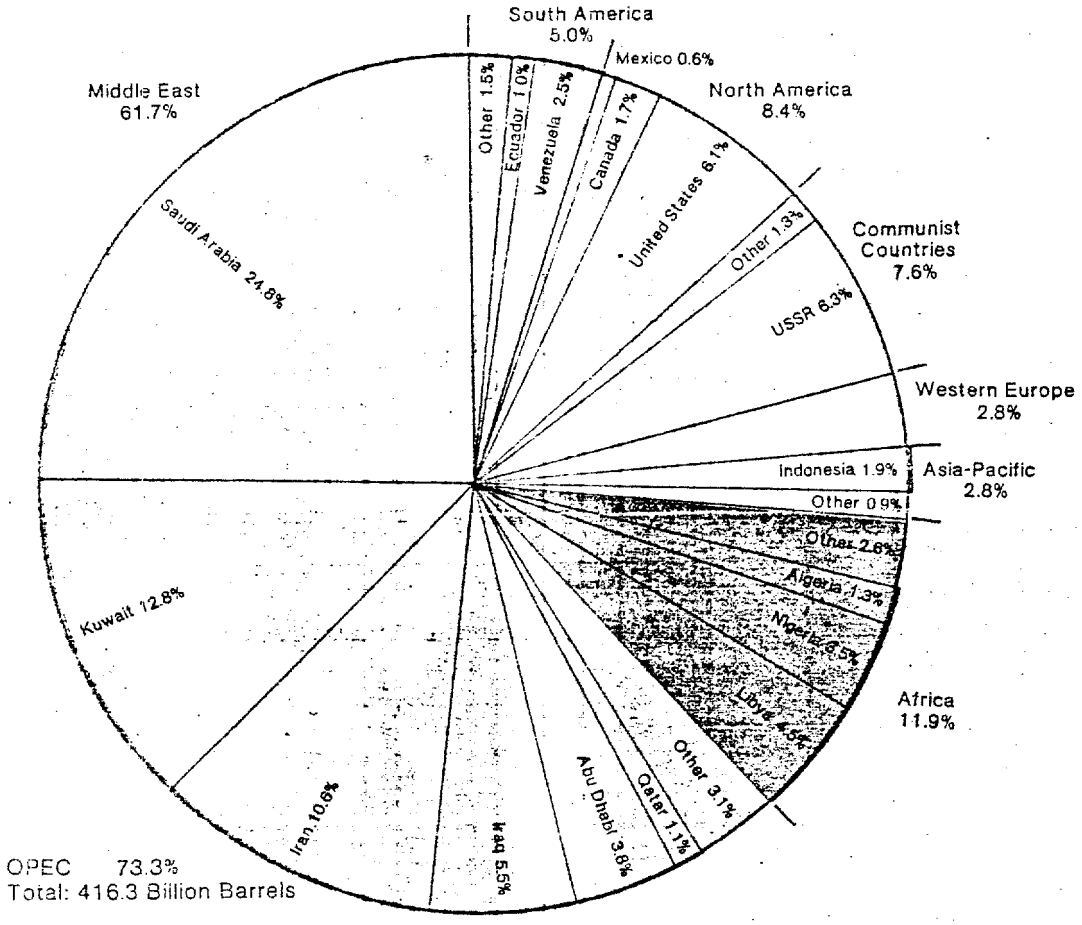
> We will continue to use [foreign] energy sources whenever they are at the right price . . . and that will expand. But we want to be in a position so that nobody can cut our lifeline.

In other words, in addition to developing domestic resources, we must diversify our international sources of energy to the greatest extent possible so that no one country or likely combination of countries will be able to influence our policies by manipulating the supply or price of our energy. Nor is this the only reason for the United States to maintain an outward-looking energy posture. US companies can provide important international services in exploration, development, and marketing of new sources of energy. It is also in our interest to see new foreign sources of energy developed in order to have adequate supplies of energy available for international economic growth.

Figure 40

World Proved Oil Reserves

Year-end 1973



Total 567.8 Billion Barrels

The Rise of Oil Prices: Implications for the World Economy

Export prices have now been divorced from factors such as costs and return to capital and are largely determined by the producer governments. Beginning in February 1971 with the Tehran Pact, effective control over oil prices has rested increasingly with producer countries working through the Organization of Petroleum Exporting Countries (OPEC). Posted prices rose approximately 70% between October 1970 and October 1973. In October 1973, the Persian Gulf producers announced unilaterally that posted prices would rise another 70% immediately. Libya joined them in announcing larger price increases. Nigeria, Venezuela, and Canada—the three largest suppliers to the United States—also declared substantial increases in their export prices—in some cases beyond those imposed for oil from the Persian Gulf. Then in December, the Shah of Iran announced on behalf of the Persian Gulf members of OPEC that the posted prices announced in October would be doubled beginning 1 January 1974. Current oil prices are shown in the table on the following page.

Price and Balance of Payments Impacts

The drastic increases in oil prices will have a significant short-term impact on both the domestic economies of all nations and on international economic relationships. However, because a price change of this magnitude for a basic industrial product has no modern precedent, the extent of the impact is uncertain.

Impact on Domestic Economies

Even before the recent price hikes, many of the world's economies were already decelerating. It was expected that growth would slow from its recent exceptionally high pace to a more sustainable one, where product shortages and inflationary pressures would ease. The higher oil prices will

PRICE STRUCTURE FOR SELECTED CRUDE OILS, 1 JANUARY 1974

(See also oil price tables in Appendix B)

US $ per Barrel

	(34° Crude) (Saudi Arabian) Persian Gulf	(34° Crude) Nigerian	(40° Crude) Libyan	(26° Crude) Venezuelan
Posted price[1]	11.65	14.69	15.77	13.67
Production cost	0.10	0.35	0.30	0.51
Government revenue	7.01	8.73	9.49	8.59
Of which:				
Royalty	1.46	1.84	1.97	2.28
Profit tax	5.55	6.88	7.42	6.31
Estimated oil company profits	0.50	0.50	0.50	0.50
Estimated sales price (f.o.b.)	7.61	9.58	10.29	9.60
Estimated transport cost[2] (to US Gulf Coast)	1.48	0.67	0.65	0.46
Estimated sales price (c.i.f.) (to US Gulf Coast)	9.09	10.25	10.94	10.06

[1] Differences in posted prices reflect differences in oil quality and transport costs.

[2] Transport costs are assumed to be about the same as the average for 1973 (i.e., World-scale 100).

accentuate this slowdown by reducing consumer purchasing power, slowing demand for petroleum-based products, and causing deferral of some business investment as well as consumer purchases. The result will be a reduction in economic growth, somewhat higher unemployment than expected and, of course, a continuing high rate of inflation with increased oil costs adding to other price pressures.

The reduction of growth, however, should be only temporary. The duration of the expected slowdown will depend largely on the ability of each economy to adjust to the new price structure. Production patterns in the world's industrial countries are now beginning to shift to meet demand for products which contain or use less petroleum. The prime example in the US is of course the shift toward smaller automobiles. The investments needed to make this structural shift will help to avoid an economic downturn, and even to increase growth in the near future. For these reasons, and because of the general soundness of the world economy, many observers believe that the economies of most nations will begin to accelerate again during the latter half of 1974.

This sequence will not come automatically. Governments will have to carefully adjust their monetary and fiscal policies so that they can help to accelerate the structural shifts without adding further inflationary pressures. Further, all nations must cooperate to avoid a competitive trade war, which could lead to a serious recession: some nations might be tempted to try to stimulate employment during this difficult period by providing export incentives or imposing import barriers, and such "exporting of unemployment" could provoke retaliation by other countries.

Impact on the World Economy

The price increases will also affect balance-of-payments accounts and international financial markets. The consuming countries' oil import bill will increase dramatically this year if current crude oil prices are maintained. At present consumption levels, world oil imports would jump from $45 billion in 1973 to about $115 billion in 1974 or about a $70 billion increase. Exporting countries' revenues will increase in 1974 to nearly $100 billion or three-and-a-half times the 1973 level. As shown below, the Arab states will receive about half of the total revenue increase, with Saudi Arabia showing the largest gain.

REVENUES FROM OIL EXPORTS

(Billion US$)

	1973 Estimated	1974 Estimated
Total	27	95
Arab	15	51
Saudi Arabia	5	20
Kuwait	2	8
Libya	2	7
Algeria	1	3
Iraq	2	6
Other	3	7
Non-Arab	12	44
Iran	4	18
Indonesia	1	4
Nigeria	3	8
Venezuela	3	11
Other	1	3

Most producers will be able to spend only a small part of their increased revenues on foreign goods and services. Even before the recent price increases, the earnings of Saudi Arabia, Kuwait, and the other small Persian Gulf states exceeded their absorptive ability. Their imports and aid dis-

bursements will probably grow substantially in 1974, but by nowhere near the amount of the increase in earnings. Other Arab producers have a greater current need for oil earnings to finance their economic development and military programs, but even in these countries the magnitude of the revenue increase and the normal delays in planning make it virtually impossible to spend all revenue this year.

The major non-Arab oil exporters—Iran, Indonesia, Nigeria, and Venezuela—will find it somewhat easier to expand imports immediately. For the most part, these countries have larger populations and greater opportunity for economic diversification than do most Arab producers. Nevertheless, the revenue increases are bound in the short run to outstrip the ability of even these countries to absorb foreign goods and services. In all, oil-producing countries will probably have extremely large surpluses to invest or deposit abroad.

These available investment funds will flow mainly to oil-consuming countries. Some will be invested in long-term assets such as real estate and securities. But because these types of investment decisions take time, most of the funds will probably go into short maturity assets—such as Eurodollars—and dollar deposit accounts. While the international financial markets will be able to absorb these investment funds, their magnitude will probably depress interest rates. Lower interest rates should, in turn, stimulate new investments in productive facilities.

The reflow of most oil exporting revenues back to the oil consuming countries will mean that, as a group their overall payments position will be balanced. Individual nations, however, may experience problems, since there is no necessary relationship between a country's higher oil import bill and the reflow of funds from the producing countries. The US will be in a fortunate position because it possesses substantial quantities of domestic oil and alternative energy sources. The sharp strengthening of the dollar in exchange markets in January 1974 reflects in part the expectation that the US balance of payments will be less severely affected than those of other industrial nations. The dollar's renewed strength, however, is a mixed blessing: continued appreciation of the dollar may reduce the competitiveness of US goods in world markets.

Developing countries face especially serious problems as a result of the price increases. The non-oil-producing LDC's face an increase in their collective oil import bill of near $10 billion this year, an amount roughly equivalent to the total development assistance being disbursed by developed countires. An undetermined but substantial figure must be added for the impact of the increased prices for imports which grow out of the increase in energy costs. It may be that some of these countries could borrow to meet increased costs, but, to the extent they do so, their ability to borrow for other purposes is reduced. The alternatives are to reduce their standard of living, receive more foreign aid, or see energy prices reduced.

Although recent developments in world energy supply have generated serious international problems, rising world consumption of oil and natural gas has been a major factor in the steady and rapid growth of US exports of energy-related equipment. We believe that exports of energy-related manufactures will ultimately be a major component of US sales abroad. As we continue the necessary research and development and investment to attain self-sufficiency in energy by 1980, we shall find ourselves exporting billions of dollars worth of equipment such as natural gas liquefaction plants, cryogenic tankers, deep sea drilling equipment, coal gasification plants, coal mining equipment, equipment to make fuel from waste products, energy transmission equipment, fuel cells, hydrogen and oxygen manufacturing equipment, magnetohydrodynamic equipment, nuclear powerplant equipment for breeder reactors, and eventually fusion reactors.

Petroleum-related Exports

Exports of drilling and other oil-field equipment reached $600 million in 1973, more than 40% above 1972. These rapidly growing sales reflect increased offshore drilling and greater drilling depths onshore. Both developments contribute to the need for more painstaking equipment quality control, higher reliability and increased sophistication, all areas in which US suppliers excel. Eventually, a change in deep-water technology will become necessary. Instead of working from surface platforms and drilling ships, contractors will locate parts or all of their operations on the ocean floor. In deep water, for work to be performed efficiently, underwater work chambers must be mated with the wellhead hemisphere for installation, inspection, and maintenance of flow lines and remote-control equipment. At present, US firms appear to have a substantial lead in developing the equipment and techniques for use in recovering hydrocarbon resources at water depths up to 1,500 feet.

Arctic engineering is another new area in which US firms have taken a lead. Intensive work in the Mackenzie Delta in Canada and the Canadian Arctic Islands has prepared American firms to undertake difficult assignments in permafrost areas.

While the United States will be exporting primarily drilling and production equipment during the rest of the decade, pipeline equipment, especially valves and compressors, will emerge as an important market contender. As trade develops in liquefied natural gas, the United States may also be in a position to sell the cryogenic ships used in intercontinental LNG transport.

Nuclear-related Exports

Economic planners in most industrialized countries had already included nuclear energy in their medium-range and long-range planning to reduce dependence on oil imports. However, recent developments in the oil supply and price picture have accelerated these plans. The French have announced that they will build no more fossil-fueled powerplants after 1977. Japan expects nuclear energy to supply 25% of its total electricity by 1985, a tenfold increase over 1972.

The American lead in nuclear technology and its application provides opportunities for expanding foreign earnings from sales of nuclear equipment, royalties and licensing fees, engineering and consultant services, and enrichment of uranium for nuclear plants abroad. Most of the commercial nuclear plants now being built abroad are installing American-type light-water reactors. In many cases, US companies have bid successfully for the basic contracts to supply reactors, to provide architect-engineering services, and to supply other equipment and services. More commonly, foreign affiliates or licensees of US corporations are in a favored position to win the basic contracts, but in any case there are substantial US earnings where US technology is being used.

US private sales of nuclear equipment and engineering were approximately $700 million in 1973 and are expected to grow to $2 billion to $3 billion annually by the mid-1980s. Uranium fuel enrichment services are also a significant part of US nuclear exports and have high future potential. The revenue earned from enrichment services from 1969 through 1973 is about $300 million. This is expected to increase to $900 million per year by 1985.